DRAGON USER

The independent Dragon magazine

June 1987

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Editorial

THIS month's issue has two items on word processing, in response to requests over the months for more on the subject. Now, I know that you are not going to sit down and write your novel over the summer. You've got better things to do (like gathering material on a beach in Tenerife), but this should set you up with some ideas when you sit down with your printer as the evenings begin to draw in. Not for a while, thank heavens. Talking of printers, *next* month will see the Great Printer Roundup, reviews and advice on a dozen different printers from a dozen different users. If anyone wants to send in a printer dump, now's the time.

After that, we'll start gathering information for a review of disc drives and DOSs. If you want to contribute, sharpen your WPs and drop us a line. I shall expect another letter from DUDE soon...

And we could do with some more reports from the London 6809 Show, especially from people who attended or exhibited at *both* London and Ossett.

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Subscriptions
UK £14 for 12 issues
Overseas (surface) £20 for 12 issues
ISSN 0265-177. Telex: 296275
Dragon User, 12/13 Little Newport Street, London WC2H 7PP
US address: c/o Business Press International, 205 East 42nd St, New York, NY 10017
Published by Scot Press Ltd.

Typesetting and Production by Artext Limited, London NW1.
Printed by Headley Brothers Ltd. Ashford, Kent
Registered at the Post Office as a newspaper.
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How to submit articles

The quality of the material we can publish in *Dragon User* each month will, to a very great extent depend on the quality of the discoveries that you can make with your Dragon. The Dragon computer was launched on to the market with a powerful version of Basic, but with very poor documentation.

Articles which are submitted to *Dragon User* for publication should not be more than 3000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, whenever possible, be computer printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy. If you want to have your program returned you must include a stamped addressed envelope.

Letters

Loan arranger

I'VE tried all the usual sources (no luck) and I desperately require the loan of the manual which accompanies Morrison's Pascal Compiler. Morrison Micros have none left at all, and I've lost mine.

Equally desperately needed is *Scribe* DeltaDOS disc and manual. I have a mountain of software and I am sure I must have something I could swap.

Finally I am trying to locate a book called *Advanced Programming with Delta-DOS*. Somebody must have bought a copy!

Nearly forgot, I'm after a dead or mortally wounded DragonDOS cartridge — maybe one that's been eaten by a dog? (See page 28 of April DU — oh, never mind!)

Many thanks for continuing to refresh us (and our Dragons) in parts that other Dragon enterprises have failed to reach!

Paul Read
7 Fairview Avenue
Whetstone
Leicester LE8 3JQ

Pete prog

I THINK the magazine is great but would like to see some more Basic programs rather than machine code ones.

I am interested in programming and would like to hear from any Dragon owner in the Peterborough area who would like to exchange ideas on this subject.

Andy Maloney
28 Chestnut Ave.
Dogsthorpe
Peterborough
Cambridge PE1 4JB

Call from the North

THE fact that Dragon shows are becoming more common is heartening but why are the majority of shows held in England and Wales? I admit that the majority of Dragon users live in England but there are many in Scotland and Northern Ireland too and I for one would not wish to travel to the south of England to attend a show, not because I'm not interested but because I could not afford the train fare and I just don't have the time. Just imagine how much the train fare from Inverness to London would cost if a reader from Birmingham spent £25.80 on his train fare. So come on all of you Dragon companies and start thinking of organising shows north of the Border, otherwise you might find yourself losing customers which you need not lose.

Donald Morrison
72 Diriebught Rd.
Inverness
Scotland IV2 3QT

THERE has been some talk about where shows should be held. London is a problem, because far and away the most people come to London shows, but venues are harder to find and much more expensive to hire and kit out. Too far north, and many of the small but vital companies who supply the Dragon would have to make one (or even two) overnight stays, thus trebling their costs and losing two extra days' work. Dragon shows at the moment are balanced in a triangle with London, Ossett and Cardiff at the points, and those places have proved accessible to all our suppliers most of the time.

This is tough on people who live in the antipodes. How about getting a minibusload together for the next show? Taking a car costs more than the train for one person, but begins to look attractive for three or more people.

Every month we will be shelling out a game or two, courtesy of Microdeal, to the reader/s who send the most interesting or entertaining letters. So send us your hints and your opinions, send us your hi-scores and suggestions. Send us your best Dragon stories. What d'you think we are, mind readers?!

EXTRA PUFF

Brain Storming . . .

I WOULD like to expand on some of the letters and answers in the March letters page as to my mind they are not entirely satisfactory.

Firstly to Tony Saunders: The colour enhancements he suggests were implemented by Premier in 1984 with a sprites graphic board which plugs into the 32's cartridge slot and gave sixteen colours plus 32 sprites, and text by using the Texas chip as incorporated in other more colourful computers. At a cost of £127 I don't believe they were very big sellers and of course Premier have long since ceased trading. I did see one advertised for £25 recently. The disadvantage with this is the cartridge port is no longer free for a disc controller and it will only work on a 32. There are plenty of software options which give four channel sound (pseudo), sprites, hires text, and extra colours (up to 32) by using artifacting. I believe software is by far the cheapest, easiest, and most flexible option for these facilities.

The 80 column text screen is already available as Mr. Saunders would be aware if he read *Dragon User* and the ads. It comes as the Dragon Plus board, which gives 128k and an 80 by 24 text screen. The disadvantage of this is that you need a 64 or a 32 upgraded to 64, and the cost is £103. However, I believe it has done well for Compusense, and while there are not an abundance there are certainly must be a few about. The other disadvantage I can see is that the 80 column screen, would only be of any use if you had software to use it, which either means writing your own, or going into OS-9 or FLEX which adds up the cost.

Nice as it would be to see these items at the prices Tony suggests, I think he is being far too hopeful. Even if Compusense could trim their prices a little, the cost of development and production of these items combined with the low volumne sales rule out the price ranges he suggests.

Likewise, the possibility of the Dragon entering the home market is remote when one considers the low cost of a purpose designed business machine these days, and the home user is bound to consider seriously the price differential between upgrading the Dragon and buying a new machine. The difference is not always that great.

Now in reply to S. R. Clayton: Your reply seems very confused between printers and disc drives. To reply briefly on what is a complex subject: The DOS for the Dragon is on a ROM cartridge. This is supplied by PNP Communications (0273 514465). For £70 you will get the DOS plus a lead. They can also supply the disc drive, which will then be ready to plug in and go. You would save money by buying a second hand drive and building your own power supply if you feel really confident (a duff power supply is a great way of blowing up expensive machinery). You can easily buy the drive from a computer store, but not the DOS. I would get a complete package from PNP provided their drive prices are not excessive.

Philip Beed, 27 Findon Road, Elson, Gosport, Hants PO12 4EP

THANKS, mate. I try to avoid giving long replies on the Letters Page unless there's a good argument in it. We have Mr. Cadge for technical queries. A well informed letter full of useful information, like this one, is another matter though. The reply to Mr. Clayton was a total and utter brainstorm. I was totally speechless when I turned to page 3 and read the immortal words "The whereabouts of the DOS depends entirely on the printer." This is what happens when editors are finishing copy by a guttering candle stub just after midnight.

Try again . . .

I WROTE a letter earlier this year on DeltaDOS, and eagerly awaited the outcome. Sure enough, two months later, the front cover showed that there was a letter from someone regarding the aforementioned subject. However, on reading the letters page I found to my dismay that there was in fact nothing about DeltaDOS at all. I hope this letter will be printed as I feel that DeltaDOS users deserve as much attention as any DOS user. After all, it was your review that showed DeltaDOS to be superior to DragonDOS.

This is the chance to air your views — send your tips, compliments and complaints to Letters Page, *Dragon User*, 12-13 Little Newport Street, London WC2H 7PP.

I was interested in the review Roy Coates gave to *BASIC42* in November's issue. It sounds a remarkable product, but I wonder why *Toolkit* by Premier was never given the recognition it deserved. Run on DeltaDOS and coupled with SCRIBE, Premier provided a superb system long ago. *Toolkit* is on eprom, fitted to your controller, giving about 60 extra basic commands and SCRIBE is on disc, giving hi-res text screens, etc.

Why was there no Delta data included in Brain Cadge's *Firmware* series? Are there any DeltaDOS user groups out there? If not, is anyone interested in forming one? I for one need information that more experienced users might have, ie how to convert certain programs from tape to disc, etc.

D. P. Martin
44 Firgrove Road
Freemantle
Southampton
Hants.

DAVID Martin has now started a user group for DeltaDOS, called DUDE (Delta Users' Data Exchange). Several people have already been in contact and says David "I have not only received help, but have also been able to assist others with information, etc." DUDE can be contacted at the address given here, or by phone on (0703 38042).

Request 'position

I WOULD like to buy the game *Juxtaposition*. Please can you tell me where I can get it and how much it would cost me?

Andrew Lamb
Oakwood
2 Marsham Road
Hazel Grove
Stockport
Cheshire
SK7 5JB

***JUXTAPOSITION* is now sold by Microdeal (0726 68020). I don't have a recent price check on that one, so give them a ring and ask. This is good practice when buying anything from an advert more than a couple of months old, by the way.**

Thanks a lot

I READ with great interest Jason Orbaum's review of *Fire Force* and must say on this rare occasion that I fully agree with his comments.

It is about time DU honestly said what they think about a game instead of 'giving it an extra Dragon 'cos they've continued their support'. In this case, the review was totally justified; the game offers little in the way of detection and seemingly contains many errors, one of which is the price. Nice graphics, great sound, shame about the game!!

Simon Jones
(DragMag)
37 Colling Meadow
Harlow
Essex
CM19 4EN

AH have this dream...ah have this dream that one day the one half of one percent of DU readers who haven't worked it out yet will find a way of putting their opinions across without slagging someone else off.

Aren't you the chap who wanted us to give you more editorial support?

And the comment on another reviewer which I had to cut from this letter was no less boring and potentially libellous just because it referred to a different publication.

Your remark about extra Dragons is a pile of rubbish, as any number of people who are now looking for Jason with an axe will testify.

Hi Score Corner

For all those desperadoes who desired to define how many eggs a chicken could chuck, we have accumulated the following testimonies:

I AM desperate to know if I've beaten the highest score on *Chuckie Egg*, which was 158870 points, level 17. Whereas my highest scores are 1) 189321 points level 19 !!AND!! 2) 191410 points, level 19.

Paul Liddicott, aged 13
146 Thisselt Road
Canvey Island
Essex SS8 9BL

I WOULD be very grateful if anyone could tell me what the high score for *Dark Star* from Design Design is. My high score is 1113 points, 12 planets and 48 bases.

Neil Liddicott
Paul's twin brother
Aged 13

BUT ONCE you start swopping hi scores you are in the international arena, where defeat is as rife as victory, and the blood of martyred fingers stains the keyboards. News comes from far off St. Helen's (no relation):

WHILE reading January's issue I came across a letter from Jonathan Baker and saw his hi score for *Chuckie Egg* was 158870 level 17. He/she said that he/she wanted (**and there's me complaining about being called Dear Sir.**) to know the hi score for *Chuckie Egg* and the highest I have ever got is 222570 level 22 and there is five ducks and one mad duck and I want to know if anyone has got higher. I would like to thank Steve for all the help he has given me. And can I thank Mark Thomson of Ashtons Green for lending me Dragon User (**Send da boize round.**) and can anyone tell me if there is a Dragon user club in Merseyside. And if so can they please contact me. And can Simon of Crawley Hill Farm contact me (if you phone phone between 4 o'clock and 4.30 on weekdays and weekends before 1am). And anyone needs help on *Trekboer* or *Syzygy* please phone or write.

Paul Iaskiewicz
40 Sidlaw Avenue
Parr, St. Helen's
Merseyside
WA9 2BQ

I WAS pleased to see that my article concerning the 6809 show was printed in the March DU. However I am disappointed that to date I have not received the promised payment. I look forward to receiving this in the near future.

As do we all, Mr. Wilkins. See page 4 of the May issue for further information. Mind you, we aren't infallible. Owing to an editorial oversight, we sent Ken Smith's cheque to an entirely different Ken Smith, who fortunately for us sent it back. Speaking as a former member of the clique, I can assure nervous contributors that Smiths are particularly prone to that sort of mix-up. But back to our writer:

I enclose my hi scores. I stress that these are not POKE aided: Space War 15570 Tim Loves Cricket 590 not out Superbowl 234 yards Sporting Decathlon 11060 Talking Android Attack 20390 Hungry Horace 2,44,478 Fearless Freddy 78510 Ninja Warrior 38600 Ugh 85214 Whirlybird Run 39800 Mr. Dig 620,600. Scores by Tim and Howard Wilkins and Simon Ellis.

Tim Wilkins
'Cloverfield'
154 Mew Hythe Lane
Larkfield
Maidstone
Kent ME20 6PS

HANG ON, I'm just looking in the rule book to see what it says about committees. Oh. One wrote it. Oh well.

Y'know, the trouble with hi scores is, how do you know your opponents aren't fibbing? Of course, *Dragon* users don't fib, but lesser breeds might be tempted by natural feelings of shame or inferiority. One way round this is to take a piccy of your hi score screen. I used to know a gentleman who scored 96 screens (or something) on a games machine. Never have so many person hours been expended on a small monochrome device which went (((poof))) every time an asteroid wiped someone out. Funny thing was, there were only supposed to *be* 26 screens. He took a photie of the finale and sent it to the makers, who went bankrupt shortly afterwards. The guv'nor confiscated the machine for the good of the department, and as he hasn't been seen since he probably still has it. Ah, them were the days.

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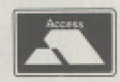
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News desk

If you have any new products for the Dragon — software or hardware — ring the News Desk on 01-437 4343

Show organisers speak out

FOLLOWING the London 6809 Show last month and the Ossett Dragon Computer Show on April 11th, *Dragon User* asked the organisers how their respective events looked after closing time.

Jenny Pope of J P Promotions was being philosophical. "I broke even and made a slight profit" she admitted, "but I won't be doing another show like this. The number of people was down on last time, and it just costs too much." Jenny's comments about covering her costs lined up with what many of the suppliers told us on the day, but she sounded more pessemistic in tone. I put this to her.

"The people who were doing their own software seemed quite happy and said they would come again," she enlarged. "The third party dealers were not very happy — they would really like to see twice the number of people there. The Horticultural Halls is a big place and I think it's too big for this kind of event now."

I mentioned that a number of people in the trade thought that the March show was a bit too soon after the successful November show at the same venue. "No, not really" she said. "I thought Easter would be a good time to have the show, but I couldn't get the Halls then and so I had to take two steps back. Other computers support two trade shows a year, so I don't think it was too soon." What about an out-of-town venue? "We've tried having shows in provincial cities, but only about half the number of people turn out. If you can't put on a show of this kind in London, you're wasting your time."

We at DU wondered about the 'other computers' and made some brief enquiries. Electron and C16 users are admittedly well served, but they ride on the back of the other, current BBC and Commodore machines. Users of other out-of-production machines rely on trade shows 'at user group level'. Nobody could remember having been to an Oric show.

Bearing this in mind, the reactions of **John Penn Discount Software**, organisers of the Ossett show, were interesting.

"We had about 500 in at the door, not including children in families, which is more than last time. We don't get as many people out here as we would in London, but it's a far smaller venue, with a nice, close atmosphere. There were a couple more suppliers, and a lot more people just doing exhibitions, showing off their home-grown software, that sort of thing. We didn't want it to be just a bring-and-buy sale, so we asked anyone who felt that they were doing something interesting on the Dragon to come along and show it off."

"It was busy all day. I spoke to everyone there, and they all seemed pleased and most of them are lined up for next year already."

"We run the Show a bit like a co-operative. We take all our expenses out, but after that the gate money is divided between the exhibitors. This means that no-one will make a big profit from organising the show, but no-one takes a big gamble by coming along, either. If people know their costs will be covered, it makes it easier for even the very small suppliers to attend."

Will there be another show this year?

"We're looking at Cardiff again, because that's a good place for exhbitors to get to, they can get there and back in a day. It won't be till after the summer, possibly November. Nobody plays with their computers much during the summer holidays, do they?"

We at DU see a vast market for portable battery packs out there somewhere.

See pages 8-9 for the Ossett Show report. More reports on either show are welcome.

Quick moves

DUE to their recent expansion, Quickbeam Software have changed their address. All orders and enquiries should now be sent to Quickbeam Software, 36 Salisbury Road, Hoddersden, Herts EN11 0HX.

Dumps please

IT looks as though we'll be publishing our reviews of printers in the July issue, so anyone who wants to send in a reliable screen dump program, this is the time to do it. We'll print the whole lot in one go.

Better Boulder

WELL known gamer Paul Burgin has completed a utility to extend and improve Blaby's *Boulder Crash* (now sold by R & AJ Preston).

Priced £3.50 including all postage and packing, the program's main features are:

- Recoded screens to allow 22 screens instead of 12
- A comprehensive screen editor (similar to Reptron 3 for other computers) which includes save/load, and hi-res pictures.
- A hacking menu for extra or infinite lives.
- A computer controlled 'Kit' program to adapt your *Boulder Crash* for editing. This only has to be done once, and does not damage the original game.

Paul is also offering a 'Hackers Challenge' — a free copy of *Hyperun* goes to the first DU reader who breaks into the program (and can describe what he or she did to get there).

The program, codenamed 'Boulder Crash2', can be had from Paul Burgin at 18 Moorcroft Road, Sheffield, S10 4GS. Payments should be made out to Paul. Please note that a copy of *Boulder Crash* is not part of the package: this is aimed at people who already have *Boulder Crash*, and it looks as if it could give the old rock a new lease of life.

Thanks

Thanks to everyone who volunteered to review *Predictor*. The review will be appearing on page 7.

Club call

Mr. R. Ball of Pontypool wants to start a local Dragon user group. If you are interested, please write to him for further information (and with any suggestions of your own) with a stamped self addressed envelope to R. Ball, Pernleight, 75 Sunnybank Road, Griffithstown, Pontypool, Gwent NP4 6LN.

Micro members

THE 68 Micro Group have a new address for their membership secretary, which is: Mr. Keith R. Barnes, 174 Glen Albyn Road, Wimbledon, London SW19 6HG. The group publish a roughly bimonthly bulletin, *68 Microcosm*, hold monthly meetings in London at the Prince George of Cumberland in Albany Street, NW1, and are setting up meetings in the Birmingham/Coventry area in the near future.

Missing persons

WE have a reader's enquiry for **John Carmel**, about a question which appeared in the April *Dragon Answers*. Unfortunately we don't have Mr. Carmel's address, so if he doesn't mind answering a query perhaps he could drop us a line.

APOLOGIES for the faulty listing which appeared with *High Noon* in the March edition. Here are the correct m/c values.

```
2490 DATA 7F, 12, 26, F7, 39, 12, 12, 26, EB, 86, 01, B7, 7F, FF, BD, 77
2510 DATA 7A00, 86, 64, B7, 7F, 00, 86, 20, B7, 7F, 01, 86, 01, B7, 7F, 02, B7
2540 DATA BD, 75, 20, BD, 79, 00, BD, 76, 00, 4F, BD, 74, 00, 86, 01, BD
3460 DATA 89, 01, 84, 5D, 01, 80, 00, 01, 80, 00, 01, C0, 00, 03, C0, 00
3470 DATA 03, C0, 00, 03, E0, 00, 07, E0, 00, 07, EO, 00, 07, E0, 00, 07
3480 DATA E0, 00, 07, F0, 00, 0F, F0, 00, 0F, F0, 00, 0F, F0, 00, 0F, F8
```

Dragonsoft

New software for review should be sent to *Dragon User*, 12-13 Little Newport Street, London WC2H 7PP.

It's my ball so . . .

Program: *Airball*
Supplier: Microdeal
Price: £5.95

SOMETIMES during the Christmas/New Year stretch, Microdeal's latest promotion leaflet arrived advertising *Stone Raider II* (what happened to I?), a sort of *Boulder Crash* clone, and *Airball* with a format along the lines of the successful *Wizard's Quest*. It sounded promising, but I let the advert fall in among my mass of Dragon literature.

A couple of weeks later, fire button finger looking for something new to blast to bits, or jump under and over, led me to scribble in the *Airball* order form, get a loan for a first class stamp and send away to those Cornish bards.

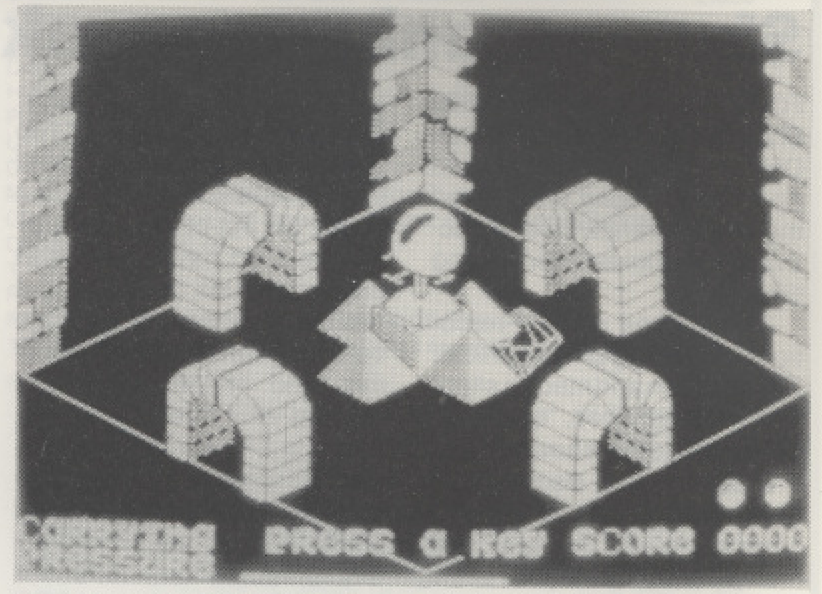
Microdeal's mailing system is normally excellent, in the past I've had orders from St. Austell back to my home in flat cap and sheep land four days after I posted them. However, this time I waited and waited, waited once again. Nothing arrived, so either the postman had a personal vendetta against me or something had gone wrong.

In fact the game's release had been delayed due to a programming problem, eventually arriving at my humble abode during early March two months later. Eyes pulsating, mouth agape, I loaded up the normal title page, with a burst of music (well written music too) and then the game itself which may to the uneducated on first sight look like *Wizard's Quest*, and I suppose in essence it is just a continuation, but it has been advanced and developed much further than the earlier title.

You are an inflatable ball (well, at least it's original) and begin by pumping air into yourself to allow you to bounce around. Beware! Too much, you burst, too little, you deflate.

Having inflated myself I then deflated my ego by torturing myself by acquiring more perforations than a teabag. How did I do this? On the various objects scattered around, spiky spheres left indiscriminately, some with flat tops which allow, with care, you to jump onto them, and others needing joystick precision to sneak past. Also, there are floors with graphic skeletons which result in you exploding immediately, unless you can manoeuvre yourself across a series of scattered steps floating above the skulls.

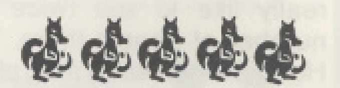
The graphics are detailed and pleasant, portrayed in a 3D manner similar in format to the Spectrum game *Knight Lore*, although they are a bit tricky to get accustomed to as with the added dimension of depth you sometimes disappear behind walls and therefore control yourself while you can't see where you're going — a bit like driving looking out of the rear window. Mapping is also proving hard, for instance, how do you construct an effective 3D chart, or manage to reduce it into 2D usefully? Also you can pick objects up en route — I never knew balls had hands, although I suppose logic is never top priority in computer software. *(You obviously haven't seen the movie "Dark Star" — Ed.)*



Apart from these pedantic quibbles this is a fine game, not as flowing as *Wizard's Quest*, more tactical and strategic rather than running around at breakneck speed, and is certainly harder than its predecessor.

My trusty old Dragon has alas now blown up and as I sit waiting for its return to health after a chip transplant, I rue the hours I could have spent on *Airball* if only I could have been released on time. Meanwhile my joystick sobs alone awaiting the future torture this game will unleash on it.

Philip Stott



Snails and puppy dogs' tales

Program: *Superkid*
Supplier: Quickbeam
Price: £8.95

WAYNE Smithson's latest offering *Superkid* must be rated as his best so far. TH eobject of the turbo-loaded game is to guide our hero in his efforts to save the ubiquitous damsel in distress. You don't need me to tell you that this is no easy task. Even a simple stroll down the smoothly scrolling tree-lined road is hampered by sneaky snails, bolshy bees and darned dogs.

The well digitised speech, which gives such encouragements as "Go get'em, Superkid" and "Well played" are almost cancelled out by the (drunken?) shout of "Superkid!" at the end of each game, although this is so bad it is actually funny enough to reduce you to a hysterically laughing wreck.

The snails pose few problems as they are easily jumped over or disposed of using "The weapon" (if you can get it) (*A poaching pan and a couple of cloves of garlic? — Ed.*). The bees have an annoying habit of swooping up and down with uncanny accuracy and landing on your head. ALthough these wee beasties can also be eliminated using "The weapon", it is not so easy to judge their position, and trying to avoid them becomes a little maddening when you have to avoid snails and dogs as well.

Now for the dogs! They are traditionally known as man's best friend, but not here! These hairy hounds will stop and wait every time *you* do, just to make sure they can cause the most trouble. There they sit with their tongues hanging out looking oh so innocent, well don't you believe it, the crafty canines cannot be destroyed, and must be avoided at all costs.

I was lucky enough to be given a review copy of *Superkid* with extra lives, but even so I didn't do as well as I would like even after playing the game for a considerable time. Some games are just hard, but this one isn't and you can only blame yourself when things go wrong. It isn't too difficult to get your name on the hi-score table but getting to the top will require a fair bit of work. The 'select a letter' method of entering your name seems just as hard as the game itself, but most genuine arcade games are the same.

The music accompanying the game is yet another masterpiece from Chris Jolly and is a blues/rock arrangement that once again makes you think it is time to part with your hard earned to get a copy of the AMS program. The graphics are extremely nice and again are slightly larger than the sprites that we have become accustomed to. The game is best played in colour as the colour mix is sometimes a little hard to distinguish on a monochrome monitor. There are many nice little touches, such as Superkid dancing to the music on the title page, which make this a very professional package.

This is probably the game that has most appealed to me in the last year or so and is one of the few games that I know I will play again and again. Get your wallet out, and let's hope its not £9.95. (*Not quite, Roy, but these folk have to eat. By the way, when are we going to get some more Microvision stuff to review? — Ed.*)

Roy Coates



. . . I'm gonna play

Program: *Airball*
Supplier: Microdeal
Price: £5.95

BEFORE I bought my copy of *Airball* I had great expectations of what the game would be like, and it has lived up to my expectations.

Airball is the follow up to Edward Scio's *Wizard's Quest*, and that in itself must indicate the game's high standards. For anyone who feels that *Wizard's Quest* was disappointing, let me say that *Airball* is a much more challenging and action packed game.

The story has the evil wizard from the earlier game turning you into a ball and sending you to the dungeons to find and return a spell-book so that he can become more powerful. Assuming you take on his challenge and succeed you will be faced with the opportunity of turning yourself back into a human — after all, who wants to be a ball!

As well as having to collect the spell book there are various other objects which you must locate such as the Dragon, a Buddha, a tin of beans — no wisecracks please!

Right, that's the story. There are no actual monsters, but who needs them when there are three different kinds of spikes strewn across the maze. To make things worse there are killer pads, one touch of which could prove fatal. And the ball which you control using the keyboard or a joystick has a slow puncture and in order to stop the pressure reaching zero you have to jump on a pump, but not for too long, or bang! you'll burst, and its not a pretty sight.

The graphics are excellent, the best I've seen and credit should go to Ed Scio who is an excellent programmer, and to Paul Shields for the excellent sound. The graphics are in black on white and everything is depicted beautifully.

When a company like Microdeal produce such an outstanding program they deserve all the support they can get. I would urge those who have credit cards to join the Day One Club. As well as getting new releases for half price you are helping to bolster Microdeal's support for the Dragon. To sum up then, an excellent game although admittedly quite difficult. *Airball* is destined to become an arcade classic. As you'll probably have gathered, I loved it!

Donald Morrison



Knit your own hero

Program: *Adventure Writer*
Supplier: Cowen Software
Price: £8.00

A FEW years back a utility called *The Quill* was released for the Spectrum and other popular machines, this enabled the general computer public at home to create their own adventures. As was the norm (and still is) no Dragon version was available.

Finally though, Cowen Software are producing *Adventure Writer*, which as the title rather gives away allows you to write your own adventures.

The 'writer' package consists of cassette with the standard text adventure program on one side, and on the reverse the facility to incorporate *Rainbow Writer* and DOS. Also there are two user manuals which take up 23 pages of A4 between them, all of which has to be read, understood and reread several more times beforfe you can attempt to dive down into the dungeons of your own adventure world. The notes themselves are comprehensive and conside, showing the features and giving examples.

First stage is creation of a new database through the Formatter program, then onto the second stage, which is the heart of the system, the Editor, where the adventure itself is constructed and to which I will return, and finally the Executor which runs the finished masterpiece. There is also an example adventure, to ilustrate some of the basic techniques and faults.

Back to the Editor. This is where your locations, etc. are entered. To try and show all the commands is impossible, within this review, but you can do just about anything you desire, until you run out of memory, which is 24K standard and 15K on extended versions.

You can have objects to carry, wear, break, up to 253 locations in which you can have the old gem of making rooms dark, which in 99% of adventures is overcome by "light candle" or "lig can" if the game accepts abbreviations, as this utility does allow. The finishing touches such as automatic wordwrap also are there (it's a pity Adventure International never used this program) along with many more commands.

If you can, then you could produce a very good adventure, leaving you to market your game, give a copy to a friend, or even melt *Adventure Writer* down into a modern sculpture, as you can load up a completed game totally independently.

I've yet to write anything resembling a decent game from this language. I call it a language because that is basically what it is, like machine code or Forth. You have to become proficient in the commands before starting.

That doesn't stop me seeing the value of this offering — the fact that Cowen's *Colossal Cave* was written on this system shows what can be done.

So if you are a half decent programmer producing half decent games, try this as it might give you the extra 50% you need. I'm only giving it four Dragons, firstly because it hasn't given me all the extra 79% I need to write a good game, but mainly as it does seem a little dated — text adventures aren't exactly vogue nowadays, and the extended version only gives 15K to play with. Otherwise its just about all you can expect from a 32K Dragon, even if it is three years too late.

Philip Stott



Not a winner this time

Program: *Predictor*
Supplier: Benley (John Penn)
Price: £4.00

THE program itself tells you that *Predictor* is a utility program which predicts the results of horse racing (both National Hunt and flat) and football matches (both League and Cup). Regrettably, what it does not tell you is the amoung of information required to arrive at a prediction. Messrs Bennet and Hurley have worked hard at their program and it, in turn, makes the user work hard on the keyboard.

On the horse racing side, it asks for information from the given 'form', the number of firsts, seconds, thirds and fourths, whether the horse is a course or distance winner, the extra weight if any, and whether or not the going is in the horse's favour. Subsequently you have to input the price in two halves as shown in the betting forecast. Finally, the number of times the horse has finished outside the first four and the number of races the horse was considered 'in form'.

Needless to say, the prediction is based upon mathematical probability with differing weighting given to each horse depending on the information submitted, and on a day when the favourites romp home, the program seems first rate; however, when the outsiders are first to cross the line, the program doesn't seem so good!

On the football side, a similar wealth of information is required — the points from the last six games, the position in the league, the 'home form', the last home points, and the number of home games played. Similarly, the same information is required for the 'away' games, and of course for the opponents. Inputting all this for 116 teams on a coupon takes a long time.

The program is, in my view, unfinished in its present form. It does not allow a database to be built up, so each week all that information for the football teams has to be re-input, there is no save facility to identify what was actually done, nor is there a printout routine.

The newspapers' sports coverage and predictions are just as good, and much quicker to read, and, judging by the results of the Grand National the tea lday's hatpin is as good as any. Full marks for effort, but only one dragon, I'm afraid.

R.L.N. Hewson



All set at Ossett

Vince Gledhill visits the northern Dragon Show on April 11th

THREE minutes to go before the doors of Ossett Town Hall open to the third John Penn Dragon Show and only a handwritten notice posted outside tells me I am at the right place. No shuffling queues of impatient Dragon users or the surging crowds of 7,000 who made the turnstiles spin at 6809 shows just three years ago.

Ah well, my reminiscing is interrupted by the tolling of the Town Hall clock and guess what? In those few moments of musing a queue had actually materialised from nowhere and was steadily snaking up the Town Hall steps. I quickly made myself part of that elusive and short-lived phenomenon.

First port of call was, naturally enough, the amply-stocked John Penn stand. Bargain hunters were offered disc and cassette software ranging from OS-9 utility programs to give-away-priced games (and you don't get more give-away than the £1 for a pack of ten games in the bargain bran tub at the side of the John Penn stall). At the other end of the display, John Penn's first venture into program publishing was being demonstrated by its author, David Maken. David has written *Music Maker*, a program which allows sheet music to be copied directly onto an screen stave using graphic notes.

The technique overcomes my own pet hate of having to convert musical notation into data statements for Microdeal's *Composer* program and endless lists of figures and letters for Dragon Data's Music Box program. In another part of the hall another solution to the same problem was being offered by Jonathan Cartwright who, with his father George, runs Starship Software.

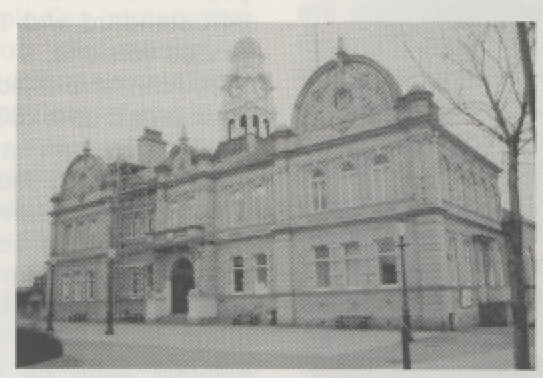
Jonathan's solution was to write *Composer Companion*, a program which is loaded after Composer to add a graphic stave and notes to it.

Composer was also used to produce a disc of twenty ragtime and jazz compositions. The program is called *El-Pea* (LP, geddit! Oh well, never mind).

El-Pea and *Composer*, like Starship Software's adventure trilogy, *Starship Destiny*, *Dungeon Destiny* and *Wild West Destiny* are available from Microvision, which was also at the Ossett Show with a range of programs including Beanstalker. Starship's other program, a hi res driver called *Hi-Res-Text*, is available from John Penn.

With *Music Maker* churning out four-part harmony at one end of the hall and *El-Pea* at the other, the place was alive with music (who said the Dragon could only squeak?) and there was more.

From the Quickbeam stand *Superkid*, the newest game from Wayne Smithson was on demo, blasting out not just music, but also some of the best synthesised speech I have heard from the Dragon, or any other computer for that matter. Music for *Superkid* was implemented using



Ossett Town Hall

DAMS, the DRAGON *Advanced Music System* program from Chris Jolly, which is used to such effect in *Fire Force*, that other Quickbeam top seller. Not surprisingly *Superkid* was one of the first titles on the Quickbeam stand to sell out. That was the good news. The bad news is that Wayne thinks it might be his last for the Dragon. He is currently working on another Dragon program, but whether it will be released depends entirely on the sales forecast.

The other Quickbeam titles at Ossett included the immensely popular *Shaolin Master*, *Electronic Author* and *Galactic Gus*, a 215-section maze game written by Dave Emmerson and highly recommended by Wayne Smithson.

Quickbeam was also selling one answer to those Dragoneers who complain that not enough programs are available on disc. That answer is Duplidisc 2, a tape-based program which will convert most cassette programs to run on disc. So far it has been successful in transferring about 80 per-cent of my tape programs to disc.

The DAMS music system was also on sale and on ear-shattering demonstration during the show.

Between electronic roars of "Go get 'em *Superkid*" and the frenetic rhythms of the DAMS demo I was just able to get a word with Malcolm Cowen on a neighbouring stall.

Around ten years ago Malcolm came across the classic *Colossal Cave* adventure on an IBM mainframe and soon came to the conclusion that writing adventures was even more interesting than playing them. He even managed to squeeze down his version of the Colossal classic to fit the Dragon 32; squeeze being the operative word. At the end of the program he had 56 bytes left. Malcolm was at the Ossett show to display and discuss his *Adventure Writer* program. Actually, *Adventure Writer* is three programs in one. It consists of an editor with which to enter and alter your program, a formatter and an executer. Their combined aim is to make the computer do the boring bits of adventure writing for you. The program comes in two versions, the standard giving a maximum free space of 24K for your adventure and an extended facility version which leaves only 15K free, but allows the program to be used with a DOS or *Rainbow Writer.*

Good news also for those buyers of *Adventure Writer* who found the literature which accompanies it a bit daunting. Malcolm has produced some additional help-notes which he is offering to anyone who feels they need them.

At the other end of the hall Ted Opyrchal was manning the Compusense stand. He had with him a substantial range of hardware and software, mostly based on the Flex and OS-9 operating systems, but nothing new among them for the Dragon. A topless, but working 64, with the Compusense Dragon Plus expansion board inside, was also on show. The interface adds a 64K memory expansion to the Dragon as well as a 24 character 80 column display through an independent video chip. The extra memory can be used as a 'virtual' disc, increasing the speed of program and data delivery almost to the level of Ted Opyrchal's sales pitch.

By the time I had made my way to the Compusense stall (admittedly it took a couple of hours since I got there via just about everyone else) the six expansion boards which Ted had brought with him has been sold — and at around a hundred pounds a shot no doubt he was wishing he had brought more.

More Dragon hardware was on offer at Ossett from PNP Communications. Sales of their Dragon Super DOS disc drive controller (fully compatible with Dragon DOS) have been going so well lately that the first production run has almost sold out and a second run is in the pipeline. A three-inch disc system for the Dragon is also under consideration at PNP.

The Newhaven-based firm also sells Dragon 32s and had them on offer at Ossett for £48 each.

In conjunction with Grovenor Software, PNP also supplies AX25 Packet Radio for Dragon and Tandy-using radio amateurs. Sales of it are reported to be going nicely.

The Dragon continues to be something of a cult machine with radio amateurs who use it to send software all over the country on the 2 metre FM amateur band.

Last year at the Ossett show three radio amateurs set up Dragons at either end of the hall and transmitted programs between them.

This year the hams were represented by Blaby Amateur Radio and Computer Club.

Paul Read (G6ZZE) and Rod Wilkes (G4TQR) were demonstrating Paul's Amateur Radio Contest Log program, which they say is all set to revolutionise radio contests by eliminating so much of the graft involved in compiling competition data that what now requires a minimum of three people can be done by one.

Equally interesting was Paul's news that in a competition situation, which can often be a rain-swept field in the middle of nowhere, the Dragon copes very tolerantly with voltage peaks and troughs in the generator-powered electricity supply.

Another idea with all kinds of possibilities was also being demonstrated by Paul and Rod. For about eight quid, Paul fitted a Dragon keyboard into a wooden case and linked it via a 15-core cable to his 64. His original aim was to overcome the problem of an awkwardly high bedroom desk which made programming uncomfortable. He built the remote keyboard to rest it more comfortably on his lap during long programming sessions. It has been successfully tested up to twenty feet from the mother terminal and Paul is now considering a further extension to the idea by adding a keypad to the remote.

Paul and Rod also brought with them a graphics demonstration the likes of which I wouldn't have believed possible on the Dragon. The photograph of it which accompanies this article is a definite case of one picture being worth a thousand words. Neither Rod or Paul were sure about who is the author, but reckon it was intended to be the opening scene for a Dragon program which was never completed.

I tore myself away from this fascinating stall to cross the hall and talk to Bob Harris of Harris Micro Software.

His range of disc-based utility software is led by Basic 42, the central core of an operation system which transforms the Dragon 64 with DOS adding a host of improved features (see Roy Coates' glowing review in the December 1986 DU for full details).

Basic 42 was extended in 1986 with Help and Spool utility programs. Three other utilities have been added for 1987. One allows icons to be added to programs, a Procs utility provides structured basic on the Dragon and a DOS utility allows all main DOS commands as well as files to be selected by cursor or mouse.

The Harris stand included disc software from Pammcomms and Grosvenor and orders were being taken for MacGowan programs (Printer Control and Dumper).

Next to Harris was the Pulser stand where Magbase, a very slick database for indexing articles letters and information from magazines was being demonstrated. Its powerful facilities were put to use on a file seperately available from Pulser with 866 records of *Dragon User* articles dating back to issue one. (Incidentally that famous first issue was on sale for £2.50 on the Peaksoft stand).

Discup, a very useful utility for just £1.99 which moves the disc workspace out of the first graphic page and down to location 1536 allowing almost all machine code programs to run with the DOS attached, was also on offer from Pulser.

Discup will be incorporated into a new utility to be called Hi-DOS which Brian O'Connor, of Pulser is confidently predicting will be the best DOS update yet including the latest patches, a faster stepping rate and a DOS written above the cartridge area to free all of the RAM below.

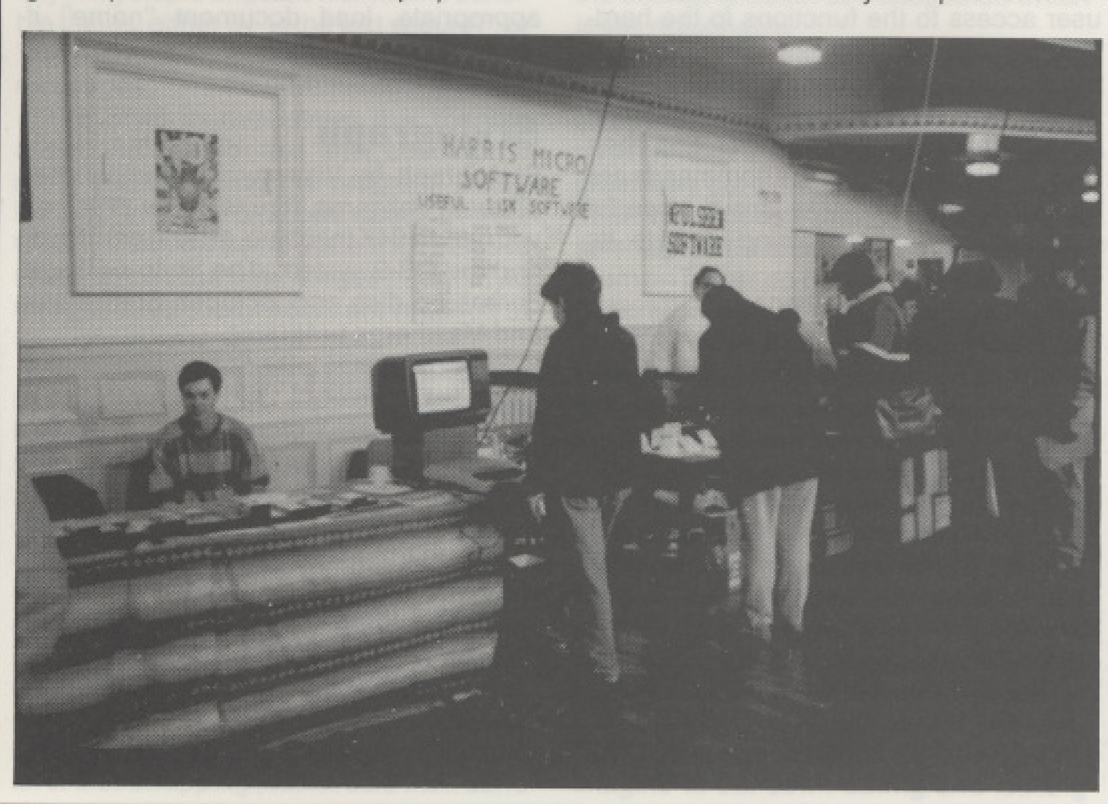
Hi-DOS was expected to be available from May onwards.

Other Pulser utilities include Copy-cat, a program to make disc-to-disc copying easier and Zapper for exploring and altering data in memory and on disc. It enables the moving, copying and repair of sections of disc as well as investigation of discs from other machines.

From Pulser I moved on to the Peaksoft stand where Harry Whitehouse reported that his company had just sold the last of its Dragon 64 keyboards which had been selling for £19.95. Supplies of the SupaSmooth replacement power supply at £18.95 are still plentiful, however. Peaksoft is not, as its name may suggest, a software company, but they do have stocks of more than 150 Dragon accessories from car stickers to T-shirts and dust covers to light pens, joysticks and printers.

Future lines from Peaksoft will include new comms and modem packs and Harry is always hopeful of finding someone with new Dragon products in search of a backer such as Peaksoft.

One of several familiar names missing from the show was Blaby Computer Games.





Two months before the show Blaby's Dragon list was taken over by R. & A.J. Preston of Mid Glamorgan. Happily, although the company was missing, the full range of bargain-priced Blaby games were still on offer at the show under the Preston banner.

Another stall kept busy by the bargain hunters was Computape, a company with a massive range of Dragon titles at rock bottom prices.

As I talked with dealers at the show the comment made more than any other was what a friendly atmosphere it had. That was because it was held in the North where folk are more friendly anyway said (totally biased Northerner) Harry Whitehouse of Peaksoft. Hugh Pearson, a partner of John Penn reckoned the smallness of the hall just made it seem busier than the London 6809 Show a month earlier. But that was no bad thing. It encouraged users and dealers to get together to talk about the Dragon in a way which didn't happen at the 6809 show, he said.

A great deal of talking was done around the OS-9 Users Group stand, which made a nice change for Martin Vernon, group chairman, and his fellow members at the Ossett Show. The group, launched about 18 months ago, usually keeps contact with its 200 members in 22 countries through an electronic news and information disc. Ten discs have been published so far. Martin was pretty optimistic about the group's future as OS-9 continues to spread its user base across a wider range of computers now including Atari.

Dragon users who prefer their news in non-electric, stick-it-in-the-back-of-your- pocket form were introduced at another of the show stands to a new newsletter called News from the Dragon available for the cost of return postage from R.A. Read 37, Edgeworth Road, Fallowfield, Manchester M14 6RU.

By the end of this five-hour show more than 400 people had visited it and all the dealers I asked said they were satisfied with the day's business. But more than that, they also felt that the atmosphere had been special.

Hugh Pearson put it this way: "Last year the exhibitors decided that Ossett had been the best show which we had been to, because of the atmosphere. The people who come here are interested in the Dragon and there are things for them to see and talk about as well as to buy, so it's a good day for everyone."

I can't quarrel with that. For user friendliness Ossett certainly deserves five dragon rating.

Three little words . . .

Roger Merrick looks over the Dragon w/p package

HAVING established what sort of equipment is required, and what expectations you should have of that and the software in the first part of this article, I wish now to look at three word-processing programs and how well they meet the criteria that I have outlined.

The evaluation will assess not just the performance of the program but also the documentation.

Minitext

I used **Minitext** by Microplot successfully every day for about a year. It is still available and costs about £7. It offers a range of functions but suffers from the lack of an upper and lower case driver, and sophisticated printer handling.

As it is written in Basic, it was possible to customise the program to my requirements. For example, I found that the black and green text display gave poor contrast on my monochrome monitor, so I made the program display in orange and black. I removed the cassette input/output from my working version as I always use disc. I added the ability to send control characters to the printer within the program, and changed the display of messages and requests for input and some of the default settings of parameters such as printed one length, and justification on/off.

However, unless you are a very slow keyboard user, you should not consider wordprocessors written in Basic. *(This is probably why we're running a Basic word processor on page XX — but it has a difference. Ed.)* There is no way for Basic to attain the speed of key input that can be achieved by an experienced wordprocessor user. A Basic program imposes a limit on the speed of input, whereas a machine code program should never drop keypresses. You may start off slow, but as you gain experience, you increase in speed. *Minitext* attempts to overcome the problem by optionally toggling the speed-up poke, if the user's machine can accept it. It automatically restores normal speed for input/output operations.

The advantage a text-screen program should have over a program using a hi-res screen is to leave more memory for text. However, *Minitext* loses much of this advantage by being in Basic: Basic is not as memory efficient as machine code, but additionally, the user is stuck with the Basic operating system — 1.5K of valuable RAM is uselessly reserved by the computer for 'graphics' since Basic does not allow PCLEARO. Then as the program is filled up with text, input speeds deteriorate as more and more time is spent clearing dead strings from memory.

Minitext typically allows up to 22K for text on a D32.

The disadvantages of using the Dragon text screen in wordprocessing are: first the obvious one of reverse video for lower case, second, the small text window — it adds to the difficulty of maintaining a line of thought through a piece when one can see only a tiny part of it at a time. Even a standard business screen of 80 by 24 characters is very little compared to a piece of A4 paper (which could be used for 80 by 66 characters).

The small text window makes proofreading and editing more difficult. When I have completed the 'creation' of a document, I flick through it on screen, correcting obvious errors, checking continuity and structure, and making any alterations that occur to me at the time. Then I make a draft print of the entire document, because, inevitably, further typographical errors and repetitious usages stand out, and other ways of wording occur to me. It is, I think, a general phenomenon that typographical errors are easier to detect on paper than on screen, hence Spellchecker programs.

Although it is a relatively straightforward matter to convert *Minitext* to run with a hi-res character screen, the program's performance deteriorates markedly in the hi-res drivers that I've used — *Rainbow Writer*, *Edit+* and Microplot's own *Hi-Text*. In these, the additional processing time needed to put characters on the hi-res screen plus *Minitext*'s keyboard input routines make everything happen in slow motion. I haven't tried it, but *Sprite Magic*, although only 42 columns wide, might be more successful, but my edition of that doesn't support the disc system, and I've been unable to obtain any help from the company (Hi there, Merlin Microsystems, Knight Software!).

Minitext has 30 'control key' functions and the possibility to BREAK the program, execute (almost) any direct command and resume the program by a GOTO1 command without losing text in memory. In this way, the ability of *Minitext* to give the user access to the functions fo the hardware is almost unlimited. For example, the program itself does not offer access to the disc directory, but the user can break the program, type DIR and then resume. Some of *Minitext*'s commands are quite unusual and make this a powerful package, worth considering despite its limitations:

i) optional right justification,
ii) organise lines in alphabetical order according to user's specification (eg if you have a list of people's names with two initials followed by surname, you can specify that alphabetical ordering starts at the beginning of the surname, not the beginning of the line,
iii) decimal align and total columns of figures,
iv) sort lines in numeric order,
v) add column of numbers without decimal alignment.

Minitext stores text as standard data files. Basic programs saved to tape as ASCII can be loaded directly, worked on, resaved to cassette, then CLOADed and run.

The commands are straightforward and easy to remember — B to backtab, C to centre, D to delete, and so on; the cursor is moved by the arrow keys.

Minitext is available for DragonDOS or PremierDOS. This means that with a single 40 track drive, the user has the usual approx 180k of storage available per disc.

The program does not offer embedded codes, so it is not possible, for example, to print one word in a line in italics, or underline part of a word, or toggle a £ symbol.

It is not possible to save your favoured default conditions other than by editing the program (OK if you know what to do). The program does not hold onto the filename, so you have to input it each time.

If you want to leave some blank lines, you can't just move the cursor down the screen or press ENTER a few times — you have to actually input at least one 'space' character and then ENTER to produce a blank line.

The 12 page manual supplied is poorly written and organised, but it does contain the necessary information. It lists and explains the syntax of the commands, and gives some ideas for using the program other than straight text creation.

To get the system running you need to do the following:

Preliminary:
i) the program is supplied on cassette, so load it, do the necessaries to the disc I/O lines to get them tokenised correctly and save the program (as 'M' to save typing MINITEXT each time) to disc. Make a backup of the disc.

Runtime:
i) type RUN'M (ENTER)
ii) set default printer line width, set justification on if required, toggle speed up poke if appropriate, load document "name" if relevant
iii) create deathless prose.

Stylograph

Stylograph by Vivaway is an altogether different ballgame. It runs under OS-9, so you need a 64K machine, at least one drive, and the OS-9 system. The Stylo package comes on disc and includes Spellcheck and Mailmerge programs.

Stylo uses GO51, the 51 by 24 upper and lower case driver of OS-9. I find this is a most unreadable character set. It also presents black letters on a green background. With a monochrome monitor, this gives poor contrast. It is preferable to display to a monochrome monitor in black and buff. I have not found a way, in Stylo, of doing this. If you have a non-Epson printer, one that gives a linefeed with a carriage return, you will not be able to use Stylo directly with your printer because all the print will be double-spaced. It is possible to switch off linefeeds in OS-9, but this does

not work with Stylo (try it). The solution is either to buy anoyther printer, or to put all your printout form Stylo through a NDUG utility and the Mailmerge program. This works, but turns the simple task of writing a letter into a week's intensive computer science. You will also find that if your printer uses control codes above 128, Stylo won't send them. Whatever happened to device independent I/O?

As far as the Dragon is concerned, Stylo and OS-9 work despite the hardware, rather than take advantage of it.

Apart from the character set, which is Dragon Data's fault, Stylo has an excellent method of displaying text. If linewidths exceed 50 characters, the test scrolls off-screen to the right, and the user presses a single key to scroll to the other side of the page. This can be done for a number of pages. Creating forms, for example, is really easy with this 'what you see is what you get' approach.

There is an initially bewildering number of controls available. Key functions are a confusing combination of cue to function by key letter (control T = tab; escape S = save marked text) and cue to function by position (cursor movement is by keys I — up, J — left, L — right, — down, K — move to left or right margin). Keys may have more than one function. Escape 7 is scroll left by 25 columns; control 7 is single insert. In fact, you do get used to this quite quickly.

Although none of the 'normal' Dragon functions are available under OS-9 (by comparison, who would want them?), all the OS-9 functions can be accessed by the user from Stylo. The only limitation ('only'!) is available memory. OS-9, as any fule no, is Very Powerful, and running it on a Dragon makes me think of using the Space Shuttle on the No. 28 busroute. It has irrelevant functions, like multi-user capability.

The multi-tasking operating system means that only in exceptional circumstances will the input routine miss a keypress (if you try to type ahead during a disc access).

The user is protected from doing anything stupid and also from some sensible things, either by 'is the text secure?', or 'command not allowed with file open' messages.

The Stylo manual states that there is about 15K free for text after booting the system and loading the program. Doing MFREE from Stylo, shows about 1K free. Clearly, I can kill some system modules to save ram — but which ones? The Stylo manual doesn't say which are required in memory or on disc.

To get up and running, you make a backup of the master disc. Then from the backup. you delete the Spellcheck directory, or transfer the *Stylograph* directory to a system disc. You'll want to BOOT straight into Stylo, so this will mean writing a custom startup file and writing it to a new disc. To do this, you'll need to be confident about the OS-9 system confident enough to know what needs to be in memory or on disc for Stylo. Stylo 'expects' system modules to be on drive 0 (more device independent I/O) so you need to either do a lot of disc swapping (easier said than done in OS-9), or, preferably, have two drives. Otherwise, a few small files will fill your disc.

Last year, I wanted to pension off my Video Genie running Model 1 Scripsit (the easiest system I've ever used), and put the Dragon to work, with OS-9 and Stylo. After about six months of wrestling with it, I sadly gave up the struggle. Actually, I wasn't sad, I was bloody angry. There is no way that, where time is money, OS-9 can compete as a system for a small business. If you are a computer enthusiast, I'm sure, like me, you will find OS-9 fascinating. But even once you've got the hang off its fiendishly unfriendly protocols, the need to access a disc for virtually everything slows down operations enormously. Now, if OS-9 was provided on ROMs which could replace the Basic ROMs, and the Dragon had, say, 256K of RAM that it could address continuously, and twin double-sided 80 track drives, or a hard disc, and a decent 80 column monochrome display, well...

Telewriter

Finally, **Telewriter** by Cognitec probably doesn't need too much description, because it must be the single most popular Dragon and Coco wordprocessing program. However, until recently it did not support disc file handling. Microdeal have now rectified this.

The first point to note is that the 'Telemod' right justify and keyboard enhancer does not work in a straightforward way with this version. That is, I can't get it to work at all, but I'm not saying it might not be possible.

This is not too much of a problem as the keyboard response seems improved; the trouble is — no right justification.

When you get the 'disc upgrade', you get a functioning version of *Telewriter*, but no 'Convert' program (it didn't work anyway) and... no manual. Microdeal expect you to have the tape version which has the documentation. If you don't have the tape then to get the best out of your program and system, you'll need to buy it, which takes the cost up to about £20 altogether, which is still reasonable.

After making a backup, you can BOOT straight into *Telewriter*. You have the option of buff or green background; not unfortunately black background with buff or green text, but it's more choice than before. Then the different printer drivers can be selected from a menu — sensible. The program on power up gives about 16K for text generation. I find this is a bit restricting. The program mysteriously slows down its keyboard response when it is full but there is information on how to get round this (in the manual, if you have it).

If you have a 64K expanded 32, the program does not make use of the upper 16K of ram the way *Rainbow Writer* does.

Telewriter stores text on tape or disc in a non-ASCII format, so if you need to load your file into a program that offers some of the facilities *Telewriter* does not offer (eg alphasort), then you need to use the 'utility' CONVERT. This, in versions I've seen, doesn't work properly. The idea was I imagine to cut down saving and loading times (ASCII files take much longer to read and write from tape).

There are 25 key commands, a number of other commands available from various menus, and embedded format and defined printer macro commands. These are mostly useful, though it seems to me that some are a bit redundant, eg moving cursor back through text fast — shift back arrow — or slow — back arrow, no shift, delete character at cursor break key, delete character to left of cursor, clear key + key. After all, some major functions are missing — screen display of page breaks, overtyping, user defined tabulation, right justify (yes I know you can pay another £2 for it, if you use tape only); there are no facilities for spellchecking or mailmerging. Surely an opportunity here?

Defined printer characters cannot exceed 128, so if, for example, you've got a DMP110 (surely my mate isn't the only one?), you can't access the extended ASCII set to obtain a £ sign.

The text display in my opinion is good — a readable character display.

The program protects the user from most risky actions, eg operations that clear memory ask you first. It is irritating that you need to specify disc I/O for every imput/output operation — if you forget, your document goes out to tape. This is time-consuming, but if you accidentally read in from tape you have to press reset to escape — that gives a hard reset, so you have to reboot (ie lose text in memory). It is also irritating that you need to reconfigure the printer each time you print a new file. Not only can you not store your preferred values from the format menu, you have to keep inputting them while you are using the program. And, if you alter screen line width you alter printout line width (this is supposed to help you envisage what your text will look like).

The disc operations are stored in a 3K basic file, so must inhibit text space and not work as efficiently as machine code. If you try to read in a non-existent or incompatable file, the filename you wrote will be recorded as the file in memory, when it hasn't loaded. Why is that? The disc routine names all text files with extention .TEX. The KILL routine only works for .TEX files, not .BAK files, so if you want to kill a .BAK file you have to RENAME it to something with a .TEX extent first. Why is that? (*Yet another safeguard against the horrible prospect of losing the last three hours' work? -Ed.*)

DragonDOS cannot convert files above a certain size to .BAK, so if you try to update an existing file, the program returns with an error, leaving you to KILL the old file.

As they are in Basic, it seems it might be possible to amend the disc operations, but if I paid £10 for them, why should I have to?

Don't let this carping make me sound dissatisfied. I wish the disc version of Telewriter had been available when the DOS was first issued. I wish the 64 character version was available for the Dragon, but I'm well pleased that at last we've got this much. I can turn around a letter really quickly now; I'm planning to replace the Video Genie with a Dragon at work.

Graphics screen wordprocessor

Dr. Anthony Daniels uses the Dragon's graphics screens to simplify text handling

HERE is a wordprocessor program which is, I believe, very different from the standard commercial formula. The text is poked into the graphics pages which means that it can be broken without loss of text.There is no string manipulation to cope with, so saving on tape or disc is very simple. The Dragon display has never been very satisfactory for handling long lines, so no attempt is made to provide a visual display of the finished work. Instead CHR$ codes are used to determine spacing, TABs, print characteristics, repeat characters and line lengths. Although this means you may have to make a few notes of how you wish the finished text to appear, complex columnization becomes extremely simple.

The instructions are detailed but there are several extra points to be made. First of all, as the program is so long, I will be happy to send a copy to anyone who sends a stamped addressed envelope plus empty cassette, or a cheque for 1.20 to A. Daniel, 8 Barnfield Rd., Riverhead, Sevenoaks, Kent. Please say whether you require the Superdos disc or tape version.

Secondly, the printed version is the Superdos Disc version. Tape users should alter line 3490 to CSAVEM 'TEXT', VM,VN,VM and line 3520 to CLOADM 'TEXT', 0 and because of the DOS habit of starting the graphics pages at 3072 instead of 1536, they can only use 17 screen pages of text, although for those who send for the tape version all 20 pages will be available.

Thirdly, the printer control codes are for the Tandy DMP105 printer. Different printer owners will have to write their own version of lines 2000 and 2010 and adjust the control codes in Data line 3280. In line 3240 V(J) reads the control code, V$(J) reads the screen information code and T(J) reads the number of characters per line where relevant. (T(J)=1 is functionless). Users will also have to adjust all the PRINT -2 commands in lines 3170 to 3390.

Finally if you are unable to insert or delete a letter on the current screen when in Edit mode, make sure you have pressed 'O'. The program is actually very easy to use and most of the instructions are to cover the extensive editing facilities.

Saving data in graphics pages can be valuable in many types of program. Those of you who bought the original version of my music printing program will be interested to learn that I have reconstructed it on the same basis so that user mistakes can be readily corrected before printing.

So I hope you will find this program worthwhile both for typing and developing other applications. Just one word of warning. As it is all in basic there are several areas where pauses may occur during operation notably before saving and printing. This is just a check to make sure that all corrections are in memory. To start, CLOAD, type PCLEARS and press ENTER, type RUN and press ENTER.

Of the initial commands only the print size must be specified, but you must also state the paper width if it is less than eight inches.

The margins are equal width on right and left. The secondary margin is explained later. The page numbering begins at 1 unless entered to the contrary.

The carriage return is automatic but may be forced by using the right hand arrow key. To leave extra lines blank give an extra press of the key for each line to be left.

To change to lower case or back to upper case press Clear. In lower case you can use the shift key as on a normal typewriter.

You may erase by backspacing. If the computer comes to an end of line marker, it will take some time to do some calculations before erasing the marker so just pause for a moment.

To tabulate press @. A full explanation of tabulation is given below.

THE KEY at the bottom of the screen reads as follows (I to r):

1 The number of spaces on the line using a particular print size or type.
2 The number of spaces already used. (An ORANGE block indicates that the line is full).
3 A letter indicating type size:
N = Normal, C = Condensed, AS = Smallest
4 Letter indicating type appearance:
B = BOLD, E = ELONGATED
(They cannot be used together)
5 L indicates underlining in progress. To alter any of the directives in 3,4 or 5 press the DOWN-ARROW key.
6 The page number. The pages change automatically when they are full, the last line of the previous page appearing at the very top of the new page.
7 The line number. This is incremented indefinitely but may be reset to 1 by forcing a carriage return and pressing '.'
8 The sign @ followed by a number gives the last used TAB postion.
9 Z or z indicates upper or lower case mode.

Tabulating

After pressing @ you may tabulate in two ways. The letters of the alphabet are used to divide the line up into whatever fraction you specified at the beginning of the program. For example the default figure is 9, so the letters A to H divide the line up into from 1 to 8 ninths (9/9 is obviously pointless) as measured from the left hand margin. Provided you use the same type size columnization will be consistent but if you change the type size there my be small variations.

When writing letters etc. use @A to start a new paragraph.

Secondly you may use @ followed by a number which will tabulate that number of spaces from your present postion. This is useful for arranging an address in diagonal array where only one TAB a line is required, but no good for columnization. The computer recognizes a two figure code so if you are using a single figure enter it, for example: 04 or 4/.

If your TAB is too long for the line or, in the case of the letters you have already passed it then nothing will happen.

Throughout the program when you try and do something impossible an orange block will appear at the bottom of the screen. Similarily if a further key press is expected the computer makes a beep. It also beeps at the end of each line to warn you to pause.

The secondary left hand margin

When writing a play you may wish to use a secondary left hand margin to separate the dialogue from the name of the speaker. This is additional to the standard TAB positions, usually B. (Using the standard settings B would be 12). Then proceed as follows:

NAME @B SPEECH...As long as the carriage return is not forced the secondary margin will be observed, but if the carriage return is forced only the primary margin will be observed (ie if you force a carriage return and still wish to observe a secondary margin you must press @B).

Editor mode

Press ENTER to go to Editor mode. You may move the red cursor around with the arrow keys. To CHANGE a letter press C followed by the letter you require.To DELETE letters press D, wait for the beep and enter the number of letters you wish to delete (max. 9).

To INSERT letters press I, wait for the beep and enter the number of letters you wish to insert. You are limited here because you cannot insert more letters than there is room for in the line or on the page. However every page allows 9 spaces at the end which can be used for insertion in Editor mode. When the Editor mode is waiting for you to insert a letter the red cursor flashes more slowly. If you actually enter this intermediate mode (by pressing C by mistake) you can leave it by pressing ENTER again.

To return the current page to typing mode press CLEAR. It will be explained later how to return other pages to typing mode.

To review other pages you have typed press + (or ;) or -, thus adding or substracting 1 to the current page. The current page can only be returned to typing mode when it is displayed, and if you have been editing

other pages you must place the red cursor where you wish the blue cursor to start before pressing CLEAR.

To PRINT OUT the current page press '6'. This key has been chosen as the least likely to be pressed accidentally. To REVIEW different pages press ' ; ' (+) or ' - '. The computer takes a little time to sort out the new page so it is always quicker to edit the current page if possible.

Screen procedures are displayed at the bottom of the screen after ENTER has been pressed while already in Editor mode:

S**** This will save to tape the pages specified, eg S0110 saves pages 1 to 10. Notice that a two number entry is required (S1/S10 is also acceptable).

Press F to find a file on tape, It will be loaded into the same pages from which it was saved.

Press P plus page numbers (P****) as for Save to PRINT the specified pages.

L**: Press L followed by a two-digit page number (two figures as previously) to display the required page.

Insertion and deletion

If you wish to insert or delete it is necessary for the computer to calculate the position of the end of line markers. If screens are changed by pressing + or — or L this will be done automatically, but to save time for simple editing it is not done when the current page is put into Editor mode. Press '0' to do this and only after it is done will you find it possible to make insertions and deletions.

An @ for a tab or line worker can only be typed in Edit mode. Leave a space in type mode and then type C and @ in edit mode. If however you press I,1,@, a TAB of 1 is inserted. Adjust it to the right value (displayed) by pressing ' ; ' (+), or — and leave the routine by pressing ' / '.

You may adjust the line spaces in exactly the same way by pressing L in edit mode then using + or — with / to finish. To create a new space press C followed by right hand arrow key. To delete a line marker press L followed by X. This will only be possible if the combined length of the two adjacent lines does not exceed the permissible line length.

You cannot delete a line marker by pressing D in edit mode but you can change it to a space by pressing C followed by the spacebar. If you do this however, you have no guide to the line length.

After pressing C,I,(+ number) or D (+ number), you will be in a position to enter all the normal letters and numbers subject to the above instructions. You may change from upper to lower case by pressing CLEAR and you can return to ordinary edit mode by pressing ENTER. Remember to press / after adjusting TABS or End of Line markers with + or — keys.

Changing type

In typing mode, as mentioned, this is done with the down arrow key followed by as many criteria as you wish to specify. The key at the bottom of the screen which is based on the screen viewed when first running the program will remind you which numbers to press. The number of letters used on the line is compensated at every change so that you do not overfill the line. (In edit mode when calculating for insertions only a simple count up of the letters on the line is made which would register full when equal to the number of letters permitted with the print size in use at the time.)

For this reason you can alter the number of letters permissible on a line in Edit mode by pressing 'A'. In this mode you can only make 1 entry at at time (either 1,2,3,5, or 8). The alteration is only relevant to the insertion of letters, it will make no difference to the actual printout. But you would have to use it if for example you wish to insert letters into a line of small print when the computer is currently set for large print, or if you wish to cheat by inserting an extra letter into a full line. (This is sometimes the only solution to an editing problem and is permissible provided you do not exceed the right hand margin width, which would result in the computer making its own independent carriage return). Press 'O' after making the change before insertion.

You may add actual print directives in ENTRY-EDIT mode (after pressing C or I) by pressing the down arrow key. Again you can only make one entry at a time whereas in typing mode you can make several entries but must then end by pressing enter or any other key apart from R.

R is the character repeater. After pressing R you must make a two-number entry of the number of repeats you require followed by the character you wish to repeat ie R09&. This sequence is only possible in typing mode.

In typing mode, to finish off a screen page before the end press '£'. Note that when backspacing over an end of line marker in calculating the number of spaces available on the preceding line the computer does not add up the TAB spaces or take account of changes of print size in the middle of the line. If in doubt retype the whole of that line.

To retype a page other than the current one, place it in edit mode and put the red cursor where you wish to start the typing. Now press K to go into typing mode. At the end of the page or on £ you will automatically return to edit mode. Once you have done this you must also treat the current page in the same way as far as the cursor is concerned although you still press CLEAR not K.

Screen procedures. If you are printing odd pages and are not sure whether the printer is set to start at the beginning of a line press '7' and it will reset. Finally if you have been editing a page and you wish to print it out using P or save it to tape, you must first press '1' while in edit mode to put it into memory. (Pressing 6 prints out the page as seen on the screen).

The maximum number of pages is 20.

```
5 ' PRINTOUT by ANTHONY DANIEL - FEBRUARY 1987
6 ' TYPE PCLEAR8 BEFORE USE IF YOU NEED MORE THAN 10 SCREEN PAGES
10 DIML(32),G(40):PRINT#-2:'12/12/86
20 ' READING DATA FOR PRINT CHARACTERISTICS
70 F1$="                    "
80 GOSUB3230
90 A=1024:KT=2:T=10:W$(1)=" ":W$(2)=" ":W$(3)=" "
100 'MAIN INITIATING COMMANDS
110 CLS:PRINT@448,"ENTER MARGIN WIDTHS AS NO. OF   CHARACTERS, BUT PAPER WIDTH IS  IN INCHES.";:PRINT@0,"SET AS
REQUIRED OR PRESS ENTER"
120 PRINT:INPUT"PAPER WIDTH (DEFAULT 8)";IN: IF IN=9 THEN IN=8:GOTO130 ELSE PRINT:INPUT"MARGIN WIDTHS (DEFAULT 4)";MB:
PRINT:INPUT"SECONDARY LEFT HAND MARGIN";MC:PRINT:INPUT"TAB DIVISIONS REQUIRED";TA:PRINT:INPUT"STARTING PAGE NO:-";AB
130 IF IN<1 OR IN>8 THEN IN=8
140 IF MB<1 OR MB>IN*T/2 THEN MB=4
150 W=IN*T-2*MB
160 IF TA<2 THEN TA=9
180 'ESTABLISHING SET UP FOR FIRST PAGE
190 IF AB<1 THEN AB=1
200 B=AB+5:S=512*B:X=32: Y=0: M=2: AB=0
210 CLS:LN=1:JS=3:R=159:GOSUB1790:HB=0:U=0:JS=0:IF PEEK(1056)<246 THEN 210
220 PO=X
230 'NORMAL RETURN POSTION FROM EDIT MODE
260 IF INKEY$="" THEN 270 ELSE 260
270 PRINT@496,USING"P## L";B-5;:PRINT@501,LN;
280 IF PEEK(329)=0 THEN POKE1533,26 ELSE POKE1533,90
282 FOR J=1 TO 5:N(J)=PEEK(409+J):NEXT
```

```
290 PRINT@486,USING"###";HB+X-PO;
300 'NORMAL RETURN POSITION WHEN IN TYPING MODE
310 POKEA+X,175:PRINT@486,USING"###";HB+X-PO;
320 A$=INKEY$: IF A$="" THEN 320
330 IF A$<CHR$(14) OR A$="@" OR A$=CHR$(35) THEN 340 ELSE PRINT@X,A$;:POKES+X,PEEK(X+A):X=X+1: GOSUB1220: GOTO310
340 IF AB>0 AND A$="#" THEN POKES+X,128:XA=X: RETURN
350 IF A$="#" THEN PO=32: GOSUB1060
360 IF AB>0 AND A$=CHR$(13) THEN RETURN
370 IF A$=CHR$(12) THEN POKE329,LC: GOSUB1380: GOTO280
390 IF A$=CHR$(8) THEN POKEA+X,96:POKES+X,96:X=X-1:POKES+X,96: GOSUB960:POKEA+X,175:GOTO310
400 IF A$=CHR$(9) THEN POKEA+X,R:POKES+X,R:LN=LN+1:PRINT@501,LN;:PO=X:HB=0:GOSUB460: GOTO930
410 IF A$=CHR$(13) THEN GOTO480
420 IF A$="@" THEN GOSUB1930: GOTO270
430 IF A$=CHR$(10) THEN GOSUB1980:IF JB=1 THEN JB=0:A$=CHR$(9):GOTO400
440 GOTO270
450 'END OF TYPING MODE. LINE FOLLOWING PRINTS OVERFILL MARKER
460 PRINT@486," ";CHR$(255);:RETURN
470 'EDIT MODE
480 RE=0:Y=480:M=143:XA=X:XB=0:W1=W:LS=B:POKEA+XA,143:POKES+XA,128:PRINT@0,CHR$(143)
490 'USUAL RETURN POSITION WHILE IN EDIT MODE
500 PRINT@Y,CHR$(191);:FOR J=1 TO 50: NEXT: POKEA+Y,M
510 IF PEEK(339)=251 THEN JS=2:GOSUB1980: JS=0:GOSUB1960: GOTO500
520 IF RE=1 AND PEEK(342)=251 THEN GOSUB3010: GOTO500
530 IF RE=1 AND PEEK(339)=247 THEN SE=1: GOSUB2850: IF IQ=0 THEN GOTO720 ELSE IQ=0: GOTO500
540 IF PEEK(339)=191 AND LS=B THEN  W=W1: S=LS*512: MX=A:MY=LS*512:GOSUB3920:RE=0: X=XA: IF XB=1 THEN X=Y:
   GOTO260 ELSE X=XA:GOTO2605
50 IF PEEK(341)=251 THEN VL=1: GOTO 720
555 IF PEEK(339)=254 THEN MY=LS*512:MX=A:GOSUB3920
560 IF PEEK(341)=223 THEN  FOR J=1 TO 100: NEXT: Y=Y-32: GOSUB1440:GOTO500
570 IF PEEK(341)=247 AND LS<>B THEN AB=B: B=LS:S=LS*512:GOSUB3390:IF AB>0 THEN MX=A:MY=LS*512:GOSUB3920:X=Y:RE=0:
   GOSUB260: B=AB:Y=480
:M=143:AB=0:PRINT@X,CHR$(143);:PRINT@0,CHR$(143): GOTO500 ELSE 500
580 IF PEEK(342)=223 THEN  FOR J=1 TO 100: NEXT: Y=Y+32: GOSUB1470:GOTO500
590 IF PEEK(342)=247 AND M>143 AND M<161 THEN GOSUB3810
600 IF PEEK(343)=223 THEN  Y=Y-1:GOSUB1510:GOTO500
610 IF PEEK(344)=223 THEN  Y=Y+1: GOSUB1550: GOTO500
620 IF PEEK(338)=191 THEN GOSUB3550
630 IF PEEK(338)=254 THEN GOSUB2640: IF IQ=1 THEN IQ=0
640 IF PEEK(344)=254 THEN 650 ELSE680
650 POKEA+XA,128
660 POKEA+Y,M: Y=480: M=143
670 GOSUB2340:POKEA+XA,143
680 IF PEEK(341)=253 THEN POKEA+Y,M: M=143: Y=480:MY=LS*512: LS=LS+1: GOSUB3350:GOSUB1960
690 IF PEEK(343)=253 THEN POKEA+Y,M: M=143: Y=480:MY=LS*512:LS=LS-1:GOSUB3350:GOSUB1960
700 GOTO500
710 'START OF ENTRY-EDIT MODE
720 C$=INKEY$: IF C$="" THEN 730 ELSE 720
730 PRINT@Y,CHR$(191);
740 FOR JJ=1 TO 300: NEXT
750 POKEA+Y,M
760 FOR JJ=1 TO 300: NEXT
770 C$=INKEY$: IF C$="" THEN 730
780 IF C$="@" AND SE=1 THEN SE=0:POKEA+Y,176: GC=PEEK(A+Y): GOSUB3700:: Y=Y+1: M=PEEK(A+Y): GOTO880
790 IF C$=CHR$(9) THEN POKEA+Y,159: Y=Y+1:M=PEEK(A+Y): GOSUB2640: GOTO880
800 SE=0
810 IF C$<CHR$(14) THEN 820 ELSE PRINT@Y,C$;: Y=Y+1: M=PEEK(A+Y): GOTO880
820 IF C$=CHR$(13) THEN POKEA+Y,M: GOTO880
830 IF C$=CHR$(12) THEN POKE329,LC: GOSUB1380:IF PEEK(329)=0 THEN POKE1533,26: GOTO730 ELSE POKE1533,90: GOTO730
840 IF C$=CHR$(10) THEN JS=1:GOSUB1980:JS=0 ELSE 880
850 Q$=INKEY$: IF Q$="" THEN 850
860 Q=VAL(Q$): IF Q<10 AND Q>0 THEN U=1 ELSE 880
870 MX=LS*512:MY=A:GOSUB3920: POKEA+Y,245+Q: Y=Y+1: M=PEEK(A+Y)
880 IF Y>=479 THEN500
```

```
890 IF VL>1 THEN VL=VL-1: GOTO730
900 FOR J=1 TO 200: NEXT: GOTO500
910 ' END OF ENTRY-EDIT MODE
920 'ROUTINE FOR END OF LINE MARKERS
930 C$=INKEY$: IF C$="" THEN 930
940 IF C$="." THEN LN=1: PRINT@501,LN;: GOTO930
950 IF C$=CHR$(9) THEN R=R-1:POKEA+X,R:POKES+X,R:LN=LN+1:PRINT@501,LN;: GOTO930 ELSE X=X+1:GOSUB1350:POKEA+X,175:
    PRINT@496,USING"P## L";B-5;:PRINT@501,LN;: A$=C$: R=159:GOTO330
960 IF X<31 THEN X=31
970 GF=PEEK(A+X)
980 IF GF>175 AND GF<208 THEN HB=HB-(GF-176): RETURN
990 IF GF>143 AND GF<160 THEN LN=LN+GF-160: PRINT@501,LN;: GOTO 1000 ELSE RETURN
1000 FA=X-1
1010 IF PEEK(A+FA)>143 AND PEEK(A+FA)<160 THEN 1030 ELSE FA=FA-1
1020 IF FA<32 THEN PO=32: RETURN ELSE GOTO1010
1030 PO=FA: RETURN
1040 RETURN
1050 'END OF PAGE ROUTINE FOLLOWS
1060 IF AB>0 AND X>471 THEN X=X-1: POKES+X,128:XA=X:RETURN
1070 POKES+X,128
1080 FOR J=1 TO 5: N(J)=PEEK(A+487+J):NEXT: D=0
1090 FOR DD=(X-32) TO X
1100 L(D)=PEEK(A+DD): D=D+1
1110 NEXT
1120 B=B+1:S=B*512:GOSUB1190: CLS
1130 FOR D=0 TO 32
1140 POKEA+D,L(D)
1150 NEXT
1160 A$="":PRINT@496,USING"P## L";B-5;:PRINT@501,LN;:X=D-1:GOSUB1960
1170 IF INKEY$<>"" THEN 1170
1180 RETURN
1190 IF B>23 THEN B=24
1200 RETURN
1210 'POSITION CHECK IN TYPING MODE
1220 IF X>470 THEN 1225 ELSE 1240
1225 IF X=471 AND A$=CHR$(32) THEN RETURN
1230 IF X>470 THEN PO=PO-438: GOTO1060
1240 IF (HB+X-PO)>W THEN SOUND200,1 ELSE RETURN
1260 FA=X-1:PRINT@486,"  ";CHR$(255);
1270 IF PEEK(A+FA)=96 OR PEEK(A+FA)=143 THEN 1280 ELSE
     FA=FA-1: GOTO1270
1280 POKEA+FA,159:POKES+FA,159: LN=LN+1: PRINT@501,LN;:
     PO=FA+1: HB=0
1290 IF MC>0 THEN 1300 ELSE 1340
1300 FOR K=X TO (FA+1) STEP-1
1310 POKE1025+K,PEEK(A+K)
1320 NEXT
1330 POKEFA+1,175+MC:HB=MC-1
1340 RETURN
1350 PO=X
1360 RETURN
1370 'ROUTINES FOR CHANGING UPPER OR LOWER CASE
1380 IF LC=255 THEN LC=0: GOTO1400
1390 IF LC=0 THEN LC=255
1400 RETURN
1410 IF LC=255 THEN POKE329,0
1420 RETURN
1430 'LIMIT SETTINGS FOR EDIT MODE
1440 IF Y=0 THEN Y=480: GOTO1490
1450 IF Y<32 THEN Y=Y+448
1460 GOTO1490
1470 IF Y=512 THEN Y=32: GOTO1490
1480 IF Y>490 THEN Y=Y-448
1490 M=PEEK(Y+A)
1500 RETURN
1510 IF Y=479 THEN RETURN
1520 IF (Y+1)/32=INT((Y+1)/32) THEN Y=Y+32
1530 M=PEEK(Y+A)
1540 RETURN
1550 IF Y/32=INT(Y/32) THEN Y=Y-32
1560 IF Y=481 THEN Y=33
1570 M=PEEK(Y+A)
1580 RETURN
1590 'MULTIPLE PAGE PRINT OUT SET UP
1600 PRINT@491,"p";:EQ=492:GOSUB3665:HJ=VAL(Q$):EQ=494:
     GOSUB3665:HK=VAL(Q$)
1670 IF HJ>20 THEN 1700 ELSE 1740
1700 FOR BB=6 TO 26
1712 IF LS=BB THEN MY=LS*512:MX=A:GOSUB3920
1715 A=BB*512:GOSUB2340:A=1024
1720 NEXT
1730 RETURN
1740 IF HJ>HK THEN AP=HJ: HJ=HK: HK=AP
1750 IF HK>20 THEN HK=20
1770 IF HJ<1 THEN HJ=1
1780 FOR BB=HJ TO HK
1790 'MX=(BB+5)*512: MY=A: GOSUB3920:GOSUB2340:GOTO1720
1792 IF LS=BB+5 THEN MY=LS*512:MX=A:GOSUB3920
1795 A=(BB+5)*512:GOSUB2340:A=1024
1800 NEXT
1810 RETURN
1820 'TAB ROUTINE
1830 POKE329,255: POKEA+505,64
1840 SOUND200,1
1850 H$=INKEY$: IF H$="" THEN 1850
```

```
1860 IF H$="/" THEN H=VAL(HA$): IF H>0 THEN 1920 ELSE RETURN
1870 IF ASC(H$)>47 AND ASC(H$)<58 THEN HA$=HA$+H$: IF LEN(HA$)=2 THEN H=VAL(HA$): GOTO1920 ELSE 1850
1880 IF ASC(H$)>64 AND ASC(H$)<64+TA THEN HM=ASC(H$)-64 ELSE GOTO1850
1890 HN=INT((HM*W)/TA): H=PO+HN-(X+HB)
1900 IF H<1 THEN GOSUB1410:HM=0:H=0: H$="":HA$="":RETURN ELSE GOTO1920
1910 GOTO1850
1920 IF (HB+X+H)>(PO+W) THEN H=0:HM=0: H$="": HA$="": GOSUB460: RETURN
1930 HB=HB+H: IF HM>0 THEN PRINT@506," ";H$;: ELSE PRINT@506,USING"##";H;
1940 IF H>32 THEN H=H-32: POKEA+X,207:POKES+X,207:X=X+1: HB=HB-1: GOTO1940
1950 POKEA+X,175+H:POKES+X,175+H: HM=0: H$="": HA$="": X=X+1:HB=HB-1: H=0: GOSUB1410: RETURN
1960 PRINT@480,F1$;:PRINT@481,USING"###";W;:PRINT@490,W$(1);:PRINT@492,W$(2);:PRINT@494,W$(3);:POKEA+509,WR:PRINT@496,
     USING"P##   "
;LS-5;:RETURN
1970 'ROUTINE FOR ESTABLISHING PRINT CHARACTERISTICS
1980 WR=PEEK(A+509):PRINT@481,"N1 C2 S3 B4 E5 L6 b7 e8 I9 R";: IF JS=1 THEN RETURN ELSE 2020
1990 JN=(HB+X-PO)/T: Q=0
2000 PRINT:PRINT"TYPEFACE:-":PRINTTAB(5)"NORMAL (1)":PRINTTAB(10)"COMPRESSED (2)":PRINTTAB(15)"CONDENSED (3)"
     :PRINT"STYLE:-":PRINTTAB (5)"BOLD - (4)":PRINTTAB(10)"ELONGATED (5)":PRINTTAB(15)"UNDERLINED (6)"
2010 PRINTTAB(5)"STOP BOLD - (7)":PRINTTAB(10)"STOP ELONGATE (8)":PRINTTAB(15)"STOP LINE (9)":PRINT: IF JS=0 THEN
     PRINT"FOR REPEAT CHARACTER ENTER 'R'"
2020 Q$=""
2025 QA$=INKEY$: IF QA$="" THEN 2025
2030 IF (ASC(QA$)>48 AND ASC(QA$)<58) OR QA$="R" THEN Q$=Q$+QA$: PRINT@1,Q$;:GOTO2025
2040 IF Q$="" THEN GOSUB1960:RETURN ELSE PRINT@1,"";:FOR J=1 TO LEN(Q$): PRINT" ";:NEXT
2050 IF JS=3 THEN CLS
2060 FOR J=1 TO LEN(Q$)
2070 Q1$=MID$(Q$,J,1)
2080 IF JS=0 AND Q1$="R" THEN R$="":R1$="":GOTO2084 ELSE 2100
2084 PRINT@480," RPTS - PUT NO. THEN CHARACTER";
2085 QB$=INKEY$: IF QB$="" THEN 2085
2088 IF QB=1 THEN QB=0:R1$=QB$:PRINTR1$;:GOSUB2160:PRINT@1,"    ";:GOTO2140
2095 IF LEN(R$)<2 AND ASC(QB$)>46 AND ASC(QB$)<58 THEN R$=R$+QB$:PRINT@1,R$;
2096 IF LEN(R$)=2 THEN QB=1:GOTO2085
2097 GOTO2085
2100 U=1:Q=VAL(Q1$): IF Q>0 AND Q<10 THEN GOSUB2220 ELSE 2140
2110 IF JS=2 THEN RETURN
2120 POKEA+X,245+Q:POKES+X,245+Q:X=X+1:HB=HB-1:IF Q=6 THEN Q5=2 ELSE Q5=0
2130 IF Q<4 THEN W$(1)=V$(Q):GOTO2140
2132 IF Q=6 OR Q=9 THEN W$(3)=V$(Q) ELSE W$(2)=V$(Q)
2140 NEXT
2150 GOSUB1960:RETURN
2160 RR=VAL(R$)
2170 IF (HB+X+RR-PO)>W THEN RR=RR-1:PRINT@1,RR: GOSUB460: GOTO2170
2175 IF RR<1 THEN RETURN
2190 POKEA+X,255:POKES+X,255:POKEA+X+1,144+RR:POKES+X+1,144+RR:PRINT@X+2,R1$;:POKES+X+2,PEEK(A+X+2):X=X+3:HB=HB+RR-3
2200 IF (HB+X-PO)=W THEN JB=1: RETURN
2210 RETURN
2220 IF Q<6 OR Q=8 THEN 2230 ELSE RETURN
2230 IF Q=4 OR Q=8 THEN KT=2: GOTO2260
2240 IF Q=5 THEN KT=0.5: GOTO2260
2250 T=T(Q)
2260 IF T<10 AND KT=2 THEN T=T*KT: MB=MB*KT: MC=MC*KT
2270 IF T>9 AND KT=0.5 THEN T=T*KT: MB=MB*KT: MC=MC*KT
2280 W=INT(IN*T-2*MB)
2290 IF JS=2 THEN RETURN ,
2300 TG=INT(JN*T)
2310 IF (HB+X-PO)>TG THEN HB=HB-1: GOTO2310
2320 IF (HB+X-PO)<TG THEN HB=HB+1: GOTO2320
2330 RETURN
2340 'PRINT-OUT ROUTINE
2350 P3=32
2360 P=PEEK(A+P3)
2365 'POKE1024+P3,P
2370 IF P=223 OR P=175 THEN 2480
2380 IF P>95 AND P<128 THEN P=P-64: GOTO2450
2390 IF P<64 THEN P=P+96: GOTO2450
2400 IF P>143 AND P<160 THEN GOSUB2490: GOTO2460
2410 IF P>245 THEN GOSUB2180: GOTO2480
2420 IF P=128 THEN RETURN
2430 IF P=171 THEN GOSUB2290: GOTO2390 ELSE 2440
2440 IF P>175 AND P<200 THEN GOSUB2550: GOTO2480
2460 PRINT#-2,CHR$(P);:GOTO2480
2480 P3=P3+1: IF P3>479 THEN RETURN ELSE GOTO2360
2490 IF P=159 THEN PRINT#-2: GOTO2530
2500 FOR P1=159 TO P STEP-1
2510 PRINT#-2
2520 NEXT
2530 IF MB>0 THEN FOR MA=1 TO MB:PRINT#-2," ";: NEXT
2540 RETURN
2550 IF P=176 THEN PRINT#-2," ";: RETURN
2560 FOR P1=176 TO P
```

```
2570 PRINT#-2," ";
2580 NEXT
2590 RETURN
2630 'EDIT MODE ROUTINE FOR IDENTIFYING END OF
     LINE MARKERS AND POSITION OF CURSOR
2640 FOR F1=1 TO 40: G(F1)=0: NEXTF1
2650 G(1)=31: E=2
2660 FOR C=32 TO XA
2670 GG=PEEK(A+C)
2680 IF GG>143 AND GG<160 AND GN<>255 THEN G(E)=C: E=E+1
2685 GN=GG
2690 NEXTC
2692 IF G(E-1)<XA THEN G(E)=XA ELSE E=E-1
2695 RE=1:RETURN
2700 EA=2
2710 IF Y>=XA THEN IQ=1: GOSUB3460: RETURN
2715 IF Y<XA AND Y>G(E-1) THEN L2=XA:L1=G(E-1):GOTO2750
2720 IF G(EA)>Y THEN L1=G(EA-1): L2=G(EA): GOTO2750
     ELSE EA=EA+1
2730 IF EA>E THEN IQ=1: GOSUB460: RETURN ELSE GOTO2720
2750 GB=0
2760 FOR S1=(L1+1) TO (L2-1)
2770 GH=PEEK(S1+A):IF GH>175 AND GH<208 THEN GB=GB+GH-176
2780 IF GH>245 THEN GB=GB-1
2790 NEXT
2800 IB=L2-L1+GB
2810 IF IB<1 THEN IB=1
2820 PRINT@486,USING"###";IB-1;
2830 RETURN
2840 'INSERTION ROUTINE
2850 IF Y>=L2 OR Y<=L1 THEN GOSUB2700 ELSE GOSUB2800
2860 IF IQ=1 THEN RETURN
2870 GOSUB2950
2880 IF IB+VL>W OR XA+VL>479 THEN GOSUB460: IQ=1: RETURN
2890 FOR I=(XA+VL) TO Y STEP-1
2900 IF I<=(Y+VL) THEN POKEA+I,223 ELSE POKEA+I,PEEK(A+I-VL)
2910 NEXT
2920 POKEA+Y,M: M=223:Y=Y+1:VH=VL:GOSUB3420
2930 GOSUB2800
2940 RETURN
2950 IF INKEY$<>"" THEN 2950
2960 SOUND200,1
2970 C$=INKEY$: IF C$="" THEN 2970
2980 IF VAL(C$)>0 THEN VL=VAL(C$) ELSE VL=1
2990 RETURN
3000 'DELETION ROUTINE
3010 GC=PEEK(A+Y)
3020 IF Y<32 OR (GC>143 AND GC<160) THEN RETURN
3030 IF Y>L2 OR Y<L1 THEN GOSUB2700
3040 IF IQ=1 THEN IQ=0: RETURN
3050 IF GC>175 AND GC<208 THEN GOSUB3700: VL=1: RETURN
3060 GOSUB2950
3070 IF VL=1 THEN 3110
3080 I=Y+1
3090 IF PEEK(A+I)>127 THEN VL=1:RETURN ELSE I=I+1
3100 IF I=Y+VL THEN 3110 ELSE 3090
3110 FOR I=Y TO XA
3120 IF I>(XA-VL) THEN POKEA+I,143 ELSE POKEA+I,PEEK(A+I+VL)
3130 NEXT
3140 VH=VL*-1:GOSUB3420:GOSUB2800: M=PEEK(A+Y): VL=1
3150 IF L2-L1=1 THEN Y=Y-1: GOTO3060
3160 RETURN
3170 'READS PRINT CHARACTERISTIC MARKERS DURING PRINT OUT
3180 V2=P-245
3190 IF V2=10 THEN GOTO3320
3200 IF V2=6 OR V2=9 THEN 3220
3210 PRINT#-2,CHR$(27);CHR$(V(V2));: RETURN
3220 PRINT#-2,CHR$(V(V2));: RETURN
3230 FOR J=1 TO 9
3240 READ V(J),V$(J),T(J)
3250 IF V$(J)="*" THEN V$(J)=" "
3260 NEXT
3270 RETURN
3280 DATA 19,N,10,23,C,12,20,S,16.7,31,B,1,14,E,1,15,L,1,32,
     *,1,15,*,1,14,*,1
3290 V3=PEEK(1025+P3): P=PEEK(1026+P3)
3300 V3=V3-175: IF V3<1 THEN P3=P3+2: RETURN
3310 PRINT#-2,CHR$(28);CHR$(V3);: P3=P3+2: RETURN
3320 R1=PEEK(1025+P3)-144:P3=P3+1
3330 PRINT#-2,CHR$(28);CHR$(R1);: RETURN
3340 'DEALS WITH NECESSARY ACTIONS ON CHANGING SCREENS
     IN EDIT MODE
3350 IF LS>25 THEN LS=6
3360 IF LS<6 THEN LS=26
3370 XB=1:MZ=LS*512: GOSUB3970
3380 GOSUB1410:GOSUB1960:RETURN
3390 IF Y<32 THEN Y=32
3400 IF Y>470 THEN AB=0
3410 RETURN
3420 EP=1:XA=XA+VH:L2=L2+VH
3422 IF G(EP)>Y THEN G(EP)=G(EP)+VH
3424 IF G(EP)=XA THEN RETURN ELSE EP=EP+1
3426 IF EP>E THEN RETURN ELSE GOTO 3422
3460 'TAPE SAVING
3465 EQ=482:GOSUB3665:VM=(VAL(Q$)+5)*512:IF VM<3072
     THEN VM=3072
3466 EQ=484:GOSUB3665:VN=(VAL(Q$)+5)*512+511:IF VN>14335
     THEN VN=14335
3470 IF VM>VN THEN 3465
3472 POKE144,3: FOR J=1 TO 2000: NEXT
3480 FOR J=1 TO 10000: NEXT
3490 SAVE "TEXT",VM,VN,VM
3500 RETURN
3510 'TAPE SEARCHING
3520 LOAD"TEXT.BIN"
3530 RETURN
3540 'SCREEN PROCEDURES SET UP
3550 POKEA+Y,M: M=143: Y=480: POKE329,255
3560 WR=PEEK(A+509):PRINT@481,"S**** F P**** L** ? ";
3580 T$=INKEY$: IF T$="" THEN 3580
3590 IF T$="?" THEN PRINT#-2
3600 IF T$="S" THEN PRINT@481,"s";:GOSUB3465:GOTO3540
```

```
3610 IF T$="L" THEN GOTO3670
3620 IF T$="F" THEN PRINT@481,"SEARCHING";:GOSUB3520:GOTO3560
3640 IF T$="P" THEN GOSUB1600
3650 IF T$=CHR$(32) THEN GOSUB1410:GOSUB1960: RETURN
3660 GOTO3580
3664 ' 2 NUMBER ROUTINE
3665 Q$=""
3666 QC$=INKEY$: IF QC$="" THEN 3666
3667 IF ASC(QC$)>47 AND ASC(QC$)<58 THEN Q$=Q$+QC$:PRINT@EQ,Q$;
3668 IF QC$="/" OR LEN(Q$)=2 THEN RETURN ELSE 3666
3670 PRINT@481,"PAGE NO. REQUIRED   ";:EQ=501:GOSUB3665:NO=VAL(Q$):IF NO>0 AND NO<21 THEN MZ=(NO+5)*512:MY=LS*512:
   GOSUB3960:XB=1:LS=N O+5 ELSE MZ=B*512:MY=LS*512: GOSUB3960: LS=B: XA=X
3680 GOSUB1410:GOSUB1960:RETURN
3690 'ADJUSTING TABS IN EDIT MODE
3700 SOUND200,1
3710 G$=INKEY$: IF G$="" THEN 3710
3720 IF G$="/" THEN 3790
3730 IF G$=";" AND GC<207  AND (L2-L1+GB)<W THEN GB=GB+1: GC=GC+1: POKEA+Y,GC: PRINT@486,USING"###";GC-175;
   :GOTO3740 ELSE 3750
3740 IF GC=207 OR (L2-L1+GB)=W THEN 3790THEN 3790
3750 IF G$="-" AND GC>176 THEN GC=GC-1: GB=GB-1: POKEA+Y,GC:PRINT@486,USING"###";GC-175;:GOTO3700
3760 IF GC=176 AND G$="-" THEN GB=GB-GC+175: GOTO3060
3770 IF G$="X" THEN GB=GB-GC+176: GOTO3060
3780 GOTO3700
3790 M=PEEK(A+Y):GOSUB2800: RETURN
3800 'ADJUSTING END OF LINE MARKERS
3810 SOUND200,1
3820 G$=INKEY$: IF G$="" THEN 3820
3830 IF G$="-" THEN M=M+1
3840 IF M>159 THEN M=159
3850 IF G$=";" THEN M=M-1
3860 IF M<144 THEN M=144
3870 IF G$="/" THEN RETURN
3880 IF G$="X" THEN POKEA+Y,143: GOSUB2640: GOTO3890 ELSE 3900
3890 IF IB<=W THEN GOSUB3060: RETURN ELSE GOSUB460
3900 POKEA+Y,M:GOTO3810
3910 ' SIMPLE SCREEN MOVE
3920 D=32
3930 POKEMY+D,PEEK(MX+D): IF D>XA THEN POKEMY+XA,128:RETURN ELSE D=D+1:GOTO3930
3960 ' DOUBLE SCREEN MOVE
3970 WR=PEEK(A+509):IF PEEK(MZ+33)=0 OR PEEK(MZ+32)=0 THEN RETURN
3972 G(1)=31:E=2:XE=32:XE=XA:XA=479:K=0:J=0:PRINT@481,XE;:XD=XA:D=32
3976 IF D<XE THEN POKEMY+D,PEEK(A+D)
3978 F=PEEK(MZ+D): IF K=0 AND F=128 THEN GOSUB4000
3980 IF K=0 THEN POKEA+D,F ELSE POKEA+D,143:GOTO3984
3982 IF F>143 AND F<160 THEN G(E)=D:E=E+1
3984 D=D+1: IF D<XD THEN 3976
3986 POKEMY+XE,128: G(E)=XA: RE=1:RETURN
4000 XA=D:K=1:PRINT@485,XA;:IF XA>XE THEN XD=XA+1 ELSE XD=XE
4005 RETURN
10000 'TAPE SAVING ROUTINE FOR WHOLE PROGRAMME
10010 FOR DA=1 TO 10000: NEXT
10020 FOR DB=1 TO 2
10030 CLS3:PRINT@100,DB;:CSAVE "PRINTOUT"
10040 CLS4:PRINT@100,DB;: FOR DC=1 TO 3000: NEXT DC
10050 NEXT DB
10060 STOP
```

If you've got a technical question write to Brian Cadge. Please do not send a SAE as Brian cannot guarantee to answer individual inquiries.

Dragon Answers

One two, One two

I HAVE recently acquired two Dragon Data disc drives and wish to transfer one drive to the other case to make a twin drive for use with my Dragon 64. I understand that the physical transfer is relatively straightforward. Are there any micro switches or jumpers that I must change to ensure that I end up with drives numbered 1 and 2, and not two number 1 drives?

Ian Lucy
13 Agnew Street
Lytham St. Annes
Lancs

You will need to change two links on the drive you want to use as number '2'. The links are found in a block of seven on the main disc drive circuit board. You need to remove the link marked MX and move the link from DS1 to DS2. Leave the other link (on HS) as it is. The links on drive number 1 do not normally need to be altered.

Changing bases

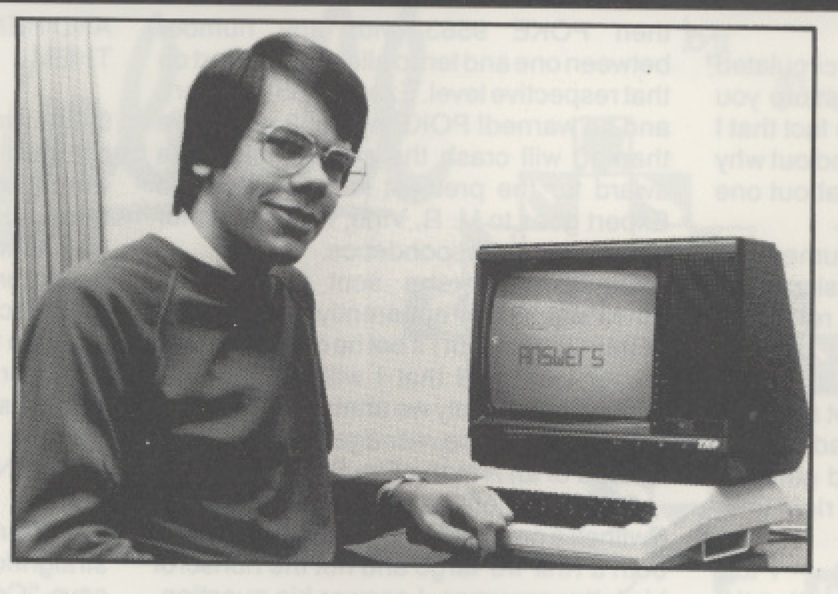
I AM currently using my Dragon 32 for college work and am writing a Basic program which needs to be able to print out numbers in any base. Currently I can only use base 10, using PRINT N and base 16, using PRINT HEX$(N). Could you perhaps give a routine to take an integer number and print it out in any base?

Stuart Phipps
Sutton
Surrey

THE routine given below will do the job you want. It takes a number in the variable N and returns the string N$ containing the number in the current base (held in the variable BA). For example, you could print the number 123 in base 3 by typing:

```
N=123:BA=3:GOSUB 500:
PRINT N$

499 REM FORMAT NUMBER TO ANY
BASE IN 'BA'
500 N$="":N1=N
510 X1=N1-(INT(N1/BA)*BA)
520 IF X1<10 THEN N$=
CHR$(48+X1)+N$ ELSE N$=
CHR$(55+X1)+N$
530 N1=INT(N1/BA):IF N1>0
THEN 510
540 RETURN
```



Header not high

I AM the owner of a Dragon 32 and have recently acquired a cassette version of 'Dream' at a jumble sale. The editor and assembler parts of the program work satisfactorily, but the problems start in trying to save blocks of source code to tape. After typing in a block of source code and then saving it, all appears to be well — the tape clicks as normal. On then attempting to reload this block, I have absolutely no success because although data can be heard on playback, no header can be heard giving filename, etc.

CSAVEM and CLOADM all work satisfactorily on my Dragon, so I suspect it is the program itself, but I have had no success in trying to disassemble *Dream* myself. Could you explain the cause of the fault and if possible a way of rectifying it?

D. H. Lancaster
38 St. Johns Way
West Lothian

THE problem is caused by the *Dream* program resetting the cassette header tone length to only four bytes (in an attempt to speed up load/save times).

Unfortunately, for many cassette recorders this is too short and does not give the automatic level control time to settle.

The solution is to make the tone longer, but this does mean blocks will take slightly longer to save/load.

Assuming that *Dream* has been loaded at its usual position starting at address 20001, before EXECing the program type in the following way:

```
POKE 29788,215 : POKE 29789,145
```

This should cure any further tape I/O errors with *Dream*.

Parts on tape

I HAVE had a Dragon 32 since 1982. Ever since then, I have been struggling on without a disc drive, using my faithful cassette and writing programs in Basic.

I have, over the last few months, been writing the Mega Game to end all Mega Games. This has caused a few problems, as the program is so large that it has to be loaded in several parts. Now, with a disc drive this presents no problem, but to a cassette user it can be a pain in the neck. I want to be able to store variables, such as score, items currently held, etc. while the new program is loaded and then put them back in the new program.

Steve Joy
26 Church Hill Road
Cheam, Surrey

THE simple solution to the problem is to store the values of these variables away into reserved RAM and peek them back after loading the new program. Assuming your variables are numeric and in the range 0-65535, you could use something like the routine below:

```
100 REM SAVE SCORE IN 'SC' AND
I1 AND I2
110 POKE 32000,INT(SC/256):POKE
32001, SC-PEEK(32000)*256
120 POKE 32000,INT(I1/256):POKE
32003,I1-PEEK(32002)*256
130 POKE 32004,INT(I2/256):POKE
32005,I2-PEEK(32005)*256
140 PRINT "TYPE 'RUN' WHEN 'OK'
APPEARS"
150 CLOAD "PROG2"
```

Then in program PROG2...

```
10 CLEAR 5000,31999
20 SC=PEEK(32000)*256
+PEEK(32001)
30 I1=PEEK(32002)*256+
PEEK(32003)
40 I2=PEEK(32004)*256+
PEEK(32005)
```

Over strung

I HAVE written a Basic program which continually creates new strings, very few of which are permanent. After a period of time I am faced with the message ?OS ERROR. Altering the CLEAR command only prolongs the life of the program a short while. Can you suggest a solution to this problem?

S. A. Siddiqui
285 Acton Lane
Chiswick, London

THE Dragon's Basic will do automatic garbage collection on strings when it is getting short of string space. You will only get the ?OS ERROR if the total string space used exceeds that reserved by the CLEAR command. I think you must be using different names for all your temporary strings, so although you know they are only needed temporarily, the computer does not. Try using the same names for temporary string variables so that more and more new ones are not created. You can force a 'garbage collection' at any point in your program by using EXEC 36055.



Expert's Arcade Arena

Write to 'The Expert' at Dragon User
12-13 Little Newport St, London WC2H 7PP.
with all your arcade tips and hints.

HI there! Missed me?

Several rumours have been circulated about my absence, and I can assure you that it has nothing to do with the fact that I sprang into action and tried to find out why Dave Hitchman was so narked about one bad *Fire Force* review.

His argument, in fact the arguments of most of those guilty of releasing sub-standard games, is that the reviewers should support the software houses because we need them. For this reason, your intrepid journalists have not received copies of *Superkid* and have had to BUY THEM! Now, I don't mind a bad game or two, but take away a journalist's right to lig and things get a bit out of hand.

So, there was nothing for it — I told Quickbeam in no uncertain terms that the only way they could make up for this grievous lack of concern was to make sure the next game was a good one. And lo and behold! *Superkid* is great!! Don't say I haven't been doing anything for the last month.

To work then. The obligatory map this month is for *Airball* by Microdeal, and is drawn by Drew Smith and Aaron Garcia. Thanks, and I think we can all learn an important lesson from the map, namely 'simplicity aids clear reading', or SACR. The opposite of which is SACRilige, which neatly ties up the joke and brings me on to M.R. Vine, whose very tasteless obituary was published last month.

Well, he's not quite dead because he wrote me a particularly colourful letter this month, giving me the following poke for Microvision's "excellent" *Miser's Dream*.. I haven't seen a copy of this yet, so I can't comment on it, but for those who have got a copy load it as normal, press reset, and then POKE 9563 with any number between one and ten to allow you to start on that respective level. Exec 20155 to restart, and be warned! POKEing 9563 with more than 10 will crash the system. Also, the award for the prettiest letter sent to the Expert goes to M. R. Vine, with thanks for his regular correspondence.

Credit is hereby sent to Michael Edwards, who apparently discovered ARMPITS first, but I'll bet he didn't get it the proper way...and that I will tell you in a minute. Apparently we printed ARPITS the first time and also managed to print an R instead of an A in the *Fire Force* cheat.

Pausing briefly to call Coed Helen from Pwllheli a grexnix for not realising that I am both a Krill Tro Targo and not the nonscrot his letter assumes, I answer his question. No, I won't publish my hi scores, because a) very few people want to know them b) they will discourage everyone else c) I could be lying anyway.

Now then, turning to *Frankie*, for which I am about to publish the PROPER way to work out the ARMPITS code.

1. Turn on *Frankie*, and select Hacker's Delight.
2. Press ENTER.
3. The message 'Half a Horse' will appear.
4. A horse is also known as a gee gee, so half a horse is a gee or G.
5. Select Hacker's Delight — press G.
6. A cursor appears.
7. Enter HELP.
8. The following will appear on the screen:

WAS IT A CAR OR A CAT I SAW

WAS IT A CAR OR A CAT I SAW

SPOT THE DIFFERENCES BETWEEN THESE TWO SENTENCES AND HENCE THE WORD CONNECTING THEM

9. The two sentences are exactly the same, but read the same way backwards as forwards, so that the second one is the first one backwards.
10. The word for sentences of this nature is Palindrome.
11. Select Hacker's Delight.
12. Type G.
13. Enter Palindrome.
14. The screen will say something like:

'NOTHING IS THAT EASY'.

15. If it isn't that easy, it is obviously not that straightforward. Type BACKWARDS and it says "Correct". Now we are back on the right track.
16. Enter Hacker's Delight.
17. Type G.
18. Enter EMORDNILAP (which is PALINDROME spelt BACKWARDS — getting the hang of it?)
19. The following problem presents itself:

RLDKK	WRONG ONE
XNTU	WRONG ONE
ZQLOHSR	RIGHT ONE

20. Move all the letters in the RIGHT ONE one position to the right so that Y becomes Z, Z becomes A, A becomes B, etc. and it spells out ARMPITS!
21. Enter Hacker's Delight.
22. Forget about G, just type ARMPITS.

The clues for the second main codeword are a lot harder to get. A system will be rewarded with publication as soon as it arrives on my desk.

The Answer

This is Gordon Lee's own solution to the March competition see page 30 for results

ANSWER: The number is 1839, and its square is 3381921. Both numbers will fit into the grid:

```
1839
   3
   1839
      1
1839
      2
      1839
```

Solution: The number, as it has a seven-digit square, must lie in the range 1000 to 3162, so all possible values are tested using the FOR/NEXT loop at line 10.

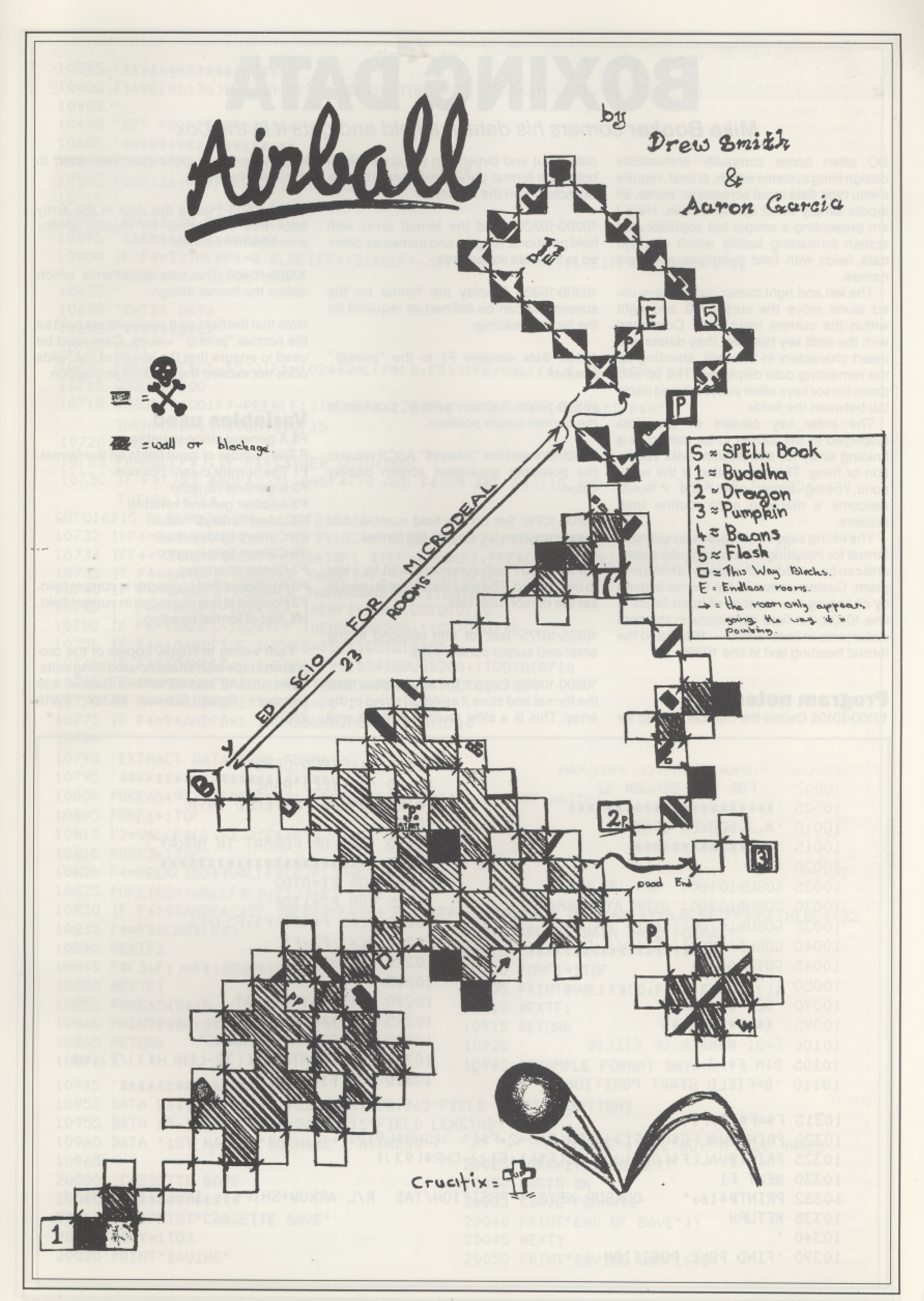
The square of the number is found in line 30.

In order to check that certain digits in each of the numbers match, it is necessary to convert both of these *numeric* variables to strings. Lines 20 to 30 do this.

Because the Dragon inserts a 'ghost' character in front of a string when using the STR$ command, this first character is removed using the MID$ command at the end of lines 20 and 30.

It is then just a matter of comparing the digits which share a space on the grid to see that they do match in both strings.

```
10 FOR N=1000 TO 3162
20 N$=STR$(N):N$=MID$(N$,2)
30 S=N*N:S$=STR$(S):S$=MID$(S$,2)
40 IF MID$(S$,1,1)=MID$(N$,3,1)
   AND MID$(S$,3,1)=MID$(N$,2,1)
   AND MID$(S$,5,1)=MID$(N$,4,1)
   AND MID$(S$,7,1)=MID$(N$,1,1)
THEN PRINT N$;" ";S$
50 NEXT N
```



Airball
by Drew Smith & Aaron Garcia
S = SPELL Book
1 = Buddha
2 = Dragon
3 = Pumpkin
4 = Beans
5 = Flask
□ = This Way Blocks.
E = Endless rooms.
→ = the room only appears going the way it is pointing.
= wall or blockage
Good End
Crucifix =

BOXING DATA

***Mike Booker** corners his data in a field and gets it in the box*

SO often home computer enthusiasts design filing systems which, at best, require menu type data input screens or, worse, all inputs simply scroll up the screen. Here I am presenting a simple but sophisticated screen formatting facility which displays data fields with field delimiters and field names.

The left and right cursor control keys used alone move the cursor left and right within the current input field. Combined with the shift key however they delete and insert characters in the field, shunting up the remaining data displayed. The up and down cursor keys allow you to tab and back-tab between the fields.

The enter key causes all the data displayed in the format to be moved to a holding array for subsequent data validation or filing. This subrouting is the weak point, being rather slow, and I would welcome a machine code routine from readers.

The listing supplied includes an example format for inputting names and addresses, and can be added unchanged to a filing program. Customisation of the format is done by changing the number of input fields in line 10100, the field definitions in the data statements in lines 10950 — 10960 and the format heading text in line 10300.

Program notes

10100-10105 Define the number of field for data input and dimension the array which holds the format parameters and the data extracted from the format.

10200-10220 Load the format array with field positions, lengths and names as defined in the data statements.

10300-10335 Display the format on the screen. H$ can be defined as required for the format heading.

10400 Sets variable F1 to the "print@" position.

10500-10505 Set the "print@" position to the current cursor position.

10600 Convert the "inkeys$" ASCII value to the pokeable equivalent screen display value.

10700-10710 Set up the field number and cursor position for input to the format.

10715-10720 Flash cursor and wait for a key to be pressed. The play statement is used to set the cursor flash rate.

10725-10775 Test for and respond to the enter and cursor control keys.

10800-10865 Extract the keyed data from the format and store it as ASCII string in the array. This is a slow routine, and the well known 'go-faster' poke has been used to minimise the delay.

10900-10915 Places the data in the array back into the format for display and/or amendment routines.

10950-10960 The data statements which define the format design.

Note that the field start positions are held as the normal "print@" values. Care must be used to ensure that the length of the fields does not exceed the last screen position.

Variables used

F$ A general string variable
F The number of input fields on the format.
F1 The current cursor position.
F2 A general variable.
F3 Another general variable.
F4 Latest "Inkey$" value.
F5 Current field number.
F6 Current field length.
F7 Cursor character.
F8 Position of first character in current field.
F9 Position of last character in current field.
H$ Text of format heading.

I am willing to supply copies of the program on tape with an associated filing suite. Send an SAE and £3 to Mike Booker, 139 Gresham Road, Staines, Middx, TW18 2AG.

```
10000 'FORMAT CONTROL PROGRAM
10002 '   FOR THE DRAGON 32
10005 '**********************
10010 'M.J.BOOKER 1985
10015 '***************
10020 '
10025 GOSUB10100:' SET UP ARRAY
10030 GOSUB10300:'DISPLAY FORMAT
10035 GOSUB10700:'ENTER DATA
10040 GOSUB10900:'REPLACE DATA
10045 GOTO10035
10050 '
10090 'SET UP ARRAY
10095 '************
10100 F=8:'NUMBER OF FIELDS
10105 DIM F$(3,F)
10110 '0=FIELD START POSITION
10115 '1=FIELD LENGTH
10120 '2=FIELD NAME
10125 '3=LAST ENTERED DATA
10185 '
10190 'SET UP FORMAT IN ARRAY
10195 '**********************
10200 FOR F1=0TO2
10205 FOR F2=1TOF
10210 READ F$:F$(F1,F2)=F$
10215 NEXT F2,F1
10220 RETURN
10225 '
10290 'DISPLAY FORMAT
10295 '**************
10300 H$="FORMAT HEADING"
10305 CLS:PRINT@INT((32-LEN(H$))/2),H$
10310 FOR F1=1TOF
10315 F$=F$(2,F1)
10320 PRINT@VAL(F$(0,F1))-LEN(F$)-2,F$;" ";CHR$(91)
10325 PRINT@VAL(F$(0,F1))+VAL(F$(1,F1)),CHR$(93);
10330 NEXT F1
10332 PRINT@416,"    CURSOR KEYS = POSITION/TAB  R/L ARROW+SHIFT = INSERT/DELETE";
10335 RETURN
10340 '
10390 'FIND POKE POSITION
```

```
10395 '*****************
10400 F1=PEEK(136)*256 + PEEK(137):RETURN
10405 '
10490 'SET PRINT@ POSITION
10495 '*****************
10500 F2=INT(F1/256):F3=INT(((F1/256)-F2)*256)
10505 POKE136,F2:POKE137,F3:RETURN
10510 '
10590 'ASCII TO POKE VAL
10595 '*****************
10600 IF F4=32THENF4=0 ELSEIFF4>31ANDF4<63THENF4=F4+64 ELSEIFF4<123ANDF4>96
 THENF4=F4-96:RETURN
10605 '
10690 'ENTER DATA
10695 '**********
10700 F5=1
10705 F6=VAL(F$(1,F5)):F1=1024+VAL(F$(0,F5)):F8=VAL(F$(0,F5)):F9=F8+F6-1
10710 GOSUB10500
10715 GOSUB10400:F7=PEEK(F1):POKEF1,128:PLAY"P50":F$=INKEY$:IFF$=""
 THENPOKEF1,F7:GOTO10715
10720 POKEF1,F7
10725 F4=ASC(F$):IF F4=13THEN GOTO10800
10730 IF F4<>93 ANDF4<>21 ANDF4<>8 AND F4<>9 AND F4<>10 AND F4<>94 THEN IF F1-1024=<F9
 THENPRINTF$;:
GOTO10715 ELSESOUND200,1:GOTO10715
10732 IFF4=21THENFORZ=F1 TOF9+1024:POKEZ,PEEK(Z+1):NEXT:POKEF9+1024,96:GOTO10710
10734 IFF4=93THENFORZ=F9+1024TOF1 STEP-1:POKEZ,PEEK(Z-1):NEXT:POKEF1,96:GOTO10710
10735 IF F4=8ANDF1-1024>F8 THENF1=F1-1:GOTO10710
10740 IF F4=8ANDF1-1024=F8 THENSOUND200,1:GOTO10710
10745 IF F4=9ANDF1-1024<F9 THENF1=F1+1:GOTO10710
10750 IF F4=9ANDF1-1024=F9 THENSOUND200,1:GOTO10710
10755 IF F4=10ANDF5<F THENF5=F5+1:GOTO10705
10760 IF F4=10ANDF5=F THENF1=F9+1024:SOUND200,1:GOTO10710
10765 IF F4=94ANDF1-1024>F8 THENF1=F8+1024:GOTO10705
10770 IF F4=94ANDF5>1 THENF5=F5-1:GOTO10705
10775 IF F4=94ANDF5=1 THENSOUND200,1:GOTO10710
10780 '
10790 'EXTRACT DATA FROM FORMAT
10795 '************************
10800 POKE65495,0:PRINT@481,"EXTRACTING DATA - PLEASE WAIT";
10805 FORF1=1TOF
10810 F2=VAL(F$(1,F1)):F$=""
10815 FORF3=1TOF2
10820 F4=PEEK(1024+VAL(F$(0,F1))+F3-1)
10825 POKE1024+VAL(F$(0,F1))+F3-1,96
10830 IF F4>95ANDF4<127 THENF4=F4-64 ELSEIFF4<27ANDF4>0 THENF4=F4+96 ELSEIFF4=0 THENF4=32
10835 F$=F$+CHR$(F4)
10840 NEXTF3
10845 F$(3,F1)=F$:SOUND100,1
10850 NEXTF1
10855 POKE65494,0
10860 PRINT@480,STRING$(31,32);
10865 RETURN
10870 '
10890 'PLACE DATA INTO FORMAT
10895 '**********************
10900 FORF1=1TOF
10905 PRINT@VAL(F$(0,F1)),F$(3,F1);
10910 NEXTF1
10915 RETURN
10920 '
10940 'EXAMPLE FORMAT DATA
10945 '*****************
10950 DATA 74,106,170,202,234,266,298,362'FIELD START POSITIONS
10955 DATA 15,15,20,20,20,20,10,15'FIELD LENGTHS
10960 DATA "1ST NAME","SURNAME","ADDRESS"," "," "," ","P/CODE","TEL NO.":FIELD NAMES
10965
20000 'CASSETTE SAVE
20005 '***********
20010 CLS:PRINT"CASSETTE SAVE"
20015 FORY=1TO3
20020 PRINT"SAVING"
20025 FORX=1TO1000:NEXT
20030 AUDIO ON
20035 CSAVE"FORMATS"
20040 PRINT"END OF SAVE";Y
20045 NEXTY
20050 PRINT"SAVING COMPLETE"
```

Winners and Losers

Every month, Gordon Lee will look at some prize programming points from a previous month's competition

WHAT a disappointing response to the January competition! That is, as regards the number of entries received. No doubt the Christmas excesses had drained all remnants of creativity from many of our readers! I had also better offer the same excuse for having omitted the name of one of the prize-winners from the winners list for that competition (*GL does himself a disservice — that was my fault — Ed.*) as printed in the April edition. This was particularly unfortunate as the entry from D. J. Gray was one of the ones I had earmarked as being the most original. So my apologies to D.J. Gray.

So that readers can try out for themselves some of the listings submitted, I have reproduced a selection here. None of them is very long (one of the requirements of the competition), but they produce a variety of effects demonstrating just what can be done with the Dragon.

Listing 1 is the aforementioned entry from D.J. Gray, which he calls a 'Dragon Curve'. I don't propose to give any further clues as to the design itself, but I can recommend that readers try it for themselves. You will certainly be surprised by the result — and I bet you a fiver (five pee, that is) that you won't be able to produce the result by just examining the listing itself! Note that line 60 should be entered just as it appears. That second equals sign and the 'not equals' sign are quite correct, as are the statements inside the brackets in lines 90 and 100. These are perfectly acceptable Basic statements which return a value of zero if the condition is false, or minus one if it is true. This can be demonstrated by the following:

A=2 : B=3 : PRINT(A=A) : PRINT(A=B)

Listing 2 came from John Smallwood, and is called 'Gammarev', as it is based on the Greek letter, but reversed as a mirror image. This entry is quite spectacular to watch while the picture builds up.

Listing 3 is one of the entries from the Gassmans (or should it be Gassmen?) of Marnhull, Dorset. Well, whatever, David and Robert Gassman sent in a couple of entries — this one simulating 'rays of light passing through a thin glass fibre whose refractive index varies along its length, or electrons winding between planes of atoms in a crystal placed in the beam of an electron microscope'. So now you know!

If you like circles, why not try **listing 4** from F.J. Taylor, or if you are more into Cubism, then **listing 5** will probably appeal. Entitled 'Ripples on a Pond' (his title, not mine), it comes from Darryl Gove of Sunbury on Thames.

Well, that ends the Tate Gallery hopefuls (*If I were the curator I'd award the Gasspeople the £3M for the best title — Ed.*), but there are more circles, unfortunately (or fortunately) untitled. **Listing 6** is from Graham Barber, one of the competition page's stalwarts, and **Listing 7** is from Cpl Bishop of BFPO 23, a newer but sterling entrant.

I ought finally to mention that a number of entries had to be disallowed for either relying too heavily on the random function, or in having every line and circle drawn at co-ordinates listing within the program itself, both of which were proscribed in the original competition! For instance, several entries were simply a random display of circles or squares producing a different display each time the program was run. Other entries relied on long sequences of DATA lines containing the details of the pattern being built up.

(Your editor plotted to enter incognito just to get the benefit of Lee Da Vinci's critical opinion. However, a little meditation and experiment reminded me that whereas I do a mean freehand sketch and can lay out any number of random patterns, I'm totally incompetent when it comes to generating anything original from a program. Ah well, as they say — back to the drawing board. A few other people must have come to a similar conclusion. And there were we, trying to catch you all while you were still too drunk to notice...).

```
Listing #1.
10 DIM S(12):X=180:Y=70:D=0
20 FOR C=0 TO 12:S(C)=0:NEXT C
30 PMODE4,1:SCREEN1,1:PCLS5:COLOR0,5
40 LINE(0,0)-(255,191),PSET,B:DRAW"BM180,70"
50 FOR C=0 TO 11
60 D=D+(S(C)=S(C+1))-S(C)<>S(C+1))
70 NEXT C
80 D=D-8*INT(D/8)
90 X=X+2*(D=0)-2*(D=4)
100 Y=Y+2*(D=2)-2*(D=6)
110 LINE-(X,Y),PSET:S(12)=S(12)+1
120 FOR C=11 TO 0 STEP-1
130 IF S(C+1)<2 THEN C=0 ELSE S(C+1)=0:S(C)=S(C)+1
140 NEXT C
150 IF S(0)=0 THEN D=0:GOTO 570
160 GOTO 160
```

```
Listing #2.
10 PMODE4,1:PCLS:SCREEN1,1
20 FOR A=1 TO 192
30 LINE(0,192)-(A,0),PSET
40 LINE(0,192)-(A,1),PRESET
50 LINE(254,192)-(A+63,1),P
   SET
60 LINE(254,192)-(A+63,0),P
   RESET
70 LINE(128,65)-(A*2/3,190)
   ,PSET
80 LINE(128,65)-(A*2/3,192)
   ,PRESET
90 LINE(128,65)-(255-A*2/3,
   190,PSET
100 LINE(128,65)-(255-A*2/3
   ,192),PRESET
110 NEXT A
120 LINE(0,192)-(192,1),PSET
```

```
Listing #3.
10 PMODE4,1:PCLS1:SCREEN1,0
15 LINE(0,9)-(240,192),PRES
   ET,B
20 QM=SQR(2*LOG(3)):PI=4*AT
   N(1)
30 FOR Q=-QM TO QM*1.001 ST
   EP QM/30
40 DRAW"BM0,"+STR$(INT(100-
   Q*90/QM))
50 FOR T=0 TO 3*PI STEP 0.2
60 X=Q*COS(EXP(-Q*Q/2)*T)
70 LINE-(T*240/3/PI,100-X*9
   0/QM),PRESET
80 NEXT T,Q
90 PAINT(20,10),0,0:PAINT(7
   0,190),0,0
100 GOTO 100
```

```
Listing #4.
10 PMODE3,1:PCLS:SCREEN1,0
20 W=0:X=255:Y=191
30 FOR L=0 TO X STEP 2
40 COLOR RND(4)
50 LINE(W,W)-(L,Y),PSET
60 LINE(X,W)-(X-L,Y),PSET
70 LINE(W,Y)-(L,W),PSET
80 LINE(X,Y)-(X-L,W),PSET
90 CIRCLE(128,96),(L+4)/3
100 NEXT L
110 GOTO 110
```

```
Listing #5.
10 PMODE4,1:PCLS:SCREEN1,0
20 A=32
30 FOR X=0 TO 255 STEP A
40 FOR Y=0 TO 191 STEP A
50 GOSUB 90:COLOR R,1-R
60 LINE(X,Y)-(X+A-1,Y+A-1),
   PSET,BF
70 NEXT:NEXT:A=A/2:IF A>.7
   THEN 30
80 GOTO 80
90 D=SQR(X^2+Y^2):D=SIN(D)
```

```
Listing #6.
10 PI=22/7:PMODE4:PCLS:SCRE
   EN1,0
20 FOR R=3 TO 61
30 FOR A=0 TO 2*PI STEP PI
   /20
40 FOR X1=64 TO 192 STEP 64
50 X=R*(COS(A))+X1:Y=R*(SIN
   (A))+96:PSET(X,Y,1):NEXT
   X1:NEXT A:NEXT R
60 GOTO 60
```

```
Listing #7.
10 R=1
20 PMODE3:SCREEN1,1:PCLS
30 FOR I=8 TO 256 STEP 16
40 FOR J=8 TO 191 STEP 11
50 CIRCLE(I,J),8,2
60 PAINT(I,J+5),R,2
70 R=R+1:IF R=5 THEN R=1
80 NEXT:NEXT
90 GOTO 90
```

IF any reader does have serious delivery/non delivery problems with any supplier, whether or not they advertise in DU, we would like to know. Only rarely can we do anything to improve a genuinely dodgy situation (which fortunately are rare) but it helps us to build up a profile and identify any long-term problems. Come to think of it, that includes *Dragon User*, as, naturally, we want to know about any bottlenecks as early as possible. Apologies in advance for not acknowledging every letter, but where we *can* be of practical help, we will.

Communication

Problem: I have been living in West Germany and have recently returned to the UK. Although I have contacts in Germany, I am starting to make new contacts here in Britain and would like to hear from anybody who is interested in swapping tips, games etc.
Name: Rick Hyde
Address: 19 Wembley Avenue, Poulton-le-Fylde, Nr. Blackpool, Lancashire FY6 7JJ.

Problem: In the December 1984 edition of Dragon User there was a program called *Snakes alive* by Andrew Wond. Two data lines are unreadable, they are data lines 1250 and 1260, or the lines beginning with 10630 and 10640. Is there anybody who has the correct lines or knows where Andrew Wond is?
Name: Stephen Stewart
Address: 18 Appin Place, Aberfeldy, Perthshire PH15 2AH

Write down your problem on the coupon below (make it as brief and legible as possible) together with your name and address and send it to Communication, Dragon User, 12/13 Little Newport Street, London WC2H 7PP.

Problem ....

Name

Address

CLASSIFIED ADS

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HERE'S MY CLASSIFIED AD.
(Please write your copy in capitals on the lines below)

Name...

Address...

.... Tele.........................

Please cut out and send this form to: Classified Department, Dragon User, 12 —13 Little Newport St, London WC2H 7PP.

Write: ADVENTURE

***Peter Gerrard** just parsed this way*

LAST month we looked at the non-computer side of writing adventure games, the setting up of the game world and so on, providing a realistic atmosphere for the players to try and make them believe that he really is taking part in a real situation. Well, almost real anyway. Hopefully by now you have most of the game area mapped out, and have been able to work out some kind of vocabulary list for the game. Although we'll be looking at that in much more detail in another article, it would be helpful both in this and next month's articles if you could have some sort of rough idea of the sorts of words you'll be using. Most adventures understand a common series of words, such as INVENTORY, SCORE, HELP, QUIT, OPEN, CLOSE, SAVE, RESTORE and so on, so if you can build up from that we'll be able to get started.

Parsers

First of all, what is a parser, and how will it help us in writing our adventure game? Well, arguably the most important part of any adventure game is the link between the player and the program itself. That is, the part of the program that allows the player to type something in, and which analyses that something. This we refer to as a parser, a means by which we can break down a sentence into its key components, and then be able to act on those components. For our purposes, a sentence can be looked at as consisting of a VERB, a NOUN, a LINK word and an ACTION word. An example should serve to explain.

Suppose the player typed in "PUT THE KEY ON THE TABLE". This we want to be able to break down into the following pieces:

VERB: PUT
LINK: KEY
ACTION: ON
NOUN: TABLE

We mentioned earlier that you will need a vocabulary list for your adventure. Assuming that we have fifty verbs, the verb PUT might be the thirty-first item in that list. Thus we need to be able to come out of our parser with a value of 31 if the word PUT is indeed the verb. Similarly for link, action and noun, we'll need to have a series of values that the program can operate on. In this case, KEY might be the second word in our list of link words, ON the fourth action word, and TABLE the twentieth noun. So, we could end up with something like:

VB=31
LI=2
AC=4
NO=20

I think you can see where the four variable names have come from! Obviously, they are VerB, LInk, ACtion, and NOun, and having got those four values we can go on to another part of the program and act accordingly. You'll note that the occurrence of the word 'THE' in our player's input is discarded: this is also true of the word 'A', so that a player might type in "PUT THE KEY ON A TABLE", but as far as the program is concerned this is immediately reduced to "PUT KEY ON TABLE". Eliminating any other words might cause problems, so we simply remove 'THE' and 'A'.

However, we cannot charge in and write a parser on the assumption that the player will always type in a sentence that consists of VERB... LINK... ACTION... NOUN. They might just enter OPEN DOOR, or even INVENTORY, so the program will have to be written with that in mind. If the player tries to type in anything more complicated, then regrettably it will not be understood. But, if a problem cannot be solved by our VERB etc. approach, then it is probably too complicated anyway and should be discarded.

The very first adventure games understood nothing more complicated than a VERB... NOUN approach, so for this month we'll content ourselves with building up a simple parser that understands just that. This in itself should enable you to write a more complicated parser for yourself, but in case you can't figure it out we'll be looking at the full version in next month's article, as well as considering the problems of text compression. That is, how to get a quart of text into a pint pot of memory. That, however, will have to wait.

Inputting information

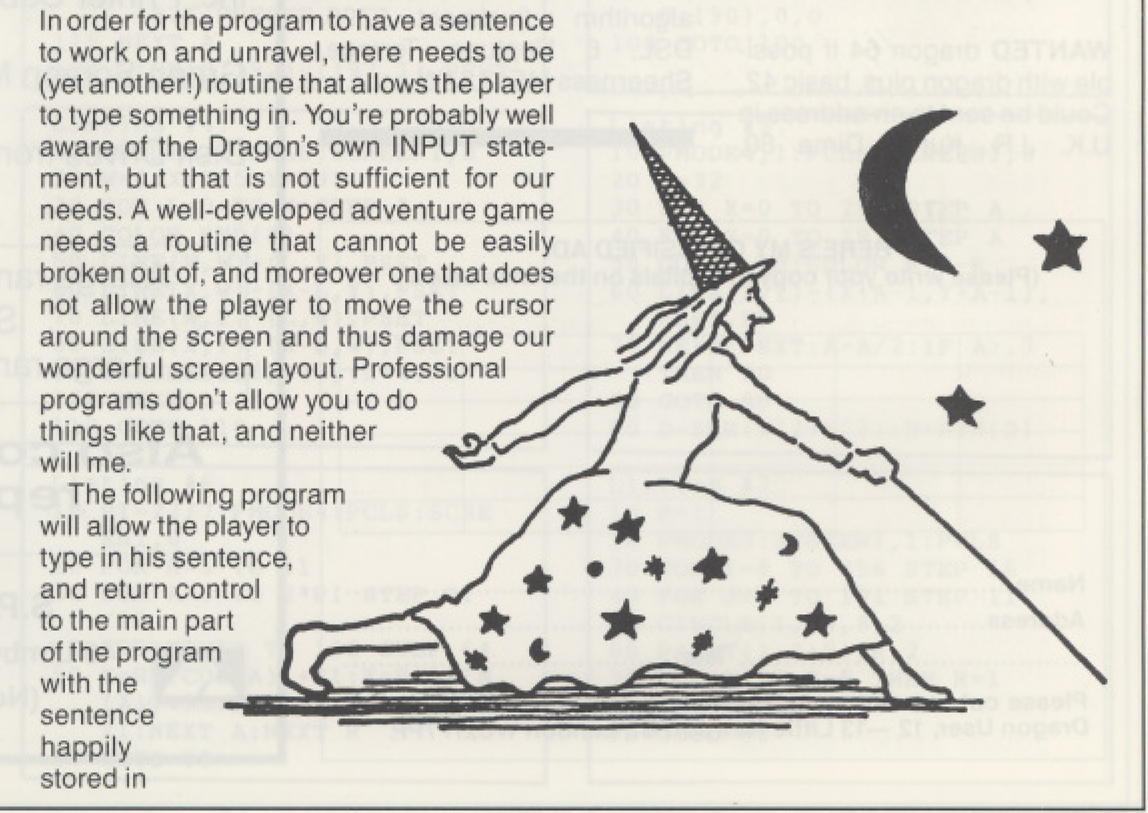
In order for the program to have a sentence to work on and unravel, there needs to be (yet another!) routine that allows the player to type something in. You're probably well aware of the Dragon's own INPUT statement, but that is not sufficient for our needs. A well-developed adventure game needs a routine that cannot be easily broken out of, and moreover one that does not allow the player to move the cursor around the screen and thus damage our wonderful screen layout. Professional programs don't allow you to do things like that, and neither will me.

The following program will allow the player to type in his sentence, and return control to the main part of the program with the sentence happily stored in the string CM$. This we can then get to work on and start analysing.

```
60000 CM$=""
60002 PRINT"*";CHRS$(8);
60004 Z$=INKEY$:IFZ$=""THEN60004
60010 Z=ASC(Z$):IF (Z>97ORZ<65)AND
Z<>32ANDZ<>13ANDZ<>8THEN60004
60012 ZL=LEN(CM$):IFZL>19THEN
60016
60014 IFZ>31THENCM$=CM$+Z$:
PRINTZ$;:GOTO60002
60016 IFZ=13ANDZL>OTHENPRINT
"":RETURN
60018 IFZ=8ANDZL>OTHENCM$=
LEFT$(CM$,ZL-1):PRINTZ$;
60020 GOTO60002
```

A few brief words of explanation. Line 60004 waits for a key to be pressed, while line 60010 checks to see that it falls within a given range. In this case, it has got to be a letter of the alphabet, the space bar, a carriage return or the delete key. Anything else is ignored. Line 60012 takes the length of our input string CM$, and checks to see if its greater than 19 characters. If it is, then go to line 60016 because we don't want to add to it. Line 60014 adds whatever was pressed to our input string, provided it isn't either the delete key or the carriage return. Lines 60016 and 60018 take care of those possibilities, assuming that at least one character is contained in the input string. Everything else is just ignored and tidied up by line 60020.

How would one go about using this subroutine? Well, like this perhaps:



```
390 PRINT:PRINT"WHAT NOW? ";:
GOSUB 60000:PRINT
392 NO$="":VB$="":VB=0:NO=0
394 LC=LEN(CM$):FORI=1TOLC:
IFMID$(CM$,1,5)=" THE "THENCM$=
LEFT$(CM$,I-1)+MID$(CM,I+5)
395 NEXTI:FORI=1TOLC:
IFMID$(CM$,I,3)=" A "THENCM$=
LEFT$(CM$,I-1)+MID$(CM$,I+3)
396 NEXTI:FORI=1TOLC:
IFMID$(CM$,I,1)<>" "THENVB$=VB$+
MID$(CM$,I,1):NEXTI
397 V1$=VB$:VB$=LEFT$(V1$,5):FORI=
1TONV:IFVB$(I)=VB$THENVB=I:
GOTO402
398 NEXTI
400 VB=1:NO$+VB$:GOTO406
402 IFLEN(V1$)+1>=
LEN(CM$)THENNO=0:RETURN
404 NO$=RIGHT$(CM$,LEN(CM$)-1-LEN
(V1$))
406 N1$=NO$*NO$=LEFT$(N1$,5):
FORI=1TONN:IFNO$=NO$(I)THEN412
408 NEXTI
410 NO=O:RETURN
412 NO=I:RETURN
```



Again, a few brief words of explanation are called for. You'll see that in line 390 we call up our input subroutine, and return from that with the string CM$ containing the sentence typed in by the player. The next few lines weed out occurences of the words "THE" and "A", before line 396 checks for the first occurrence of a space. If one is found, the the VERB is assumed to be the word to the left of the space, and the NOUN is assumed to be the word to the right of the space. Then, the string V1$ is assigned to the verb and N1$ is assigned to the noun.

Two variables need explaining. NV contains the number of verbs, and NN the number of nouns, in our list of words. The arrays VB$ and NO$ contain all the verbs and nouns that the program understands, so if a player typed in "OPEN THE DOOR", and OPEN was the fourth verb and DOOR the seventh noun, then VB$(4) would equal "OPEN" and NO$(&) would equal "DOOR". In this example, the program would return with the value of 4 stored in the variable VB and the value of 7 in the variable NO.

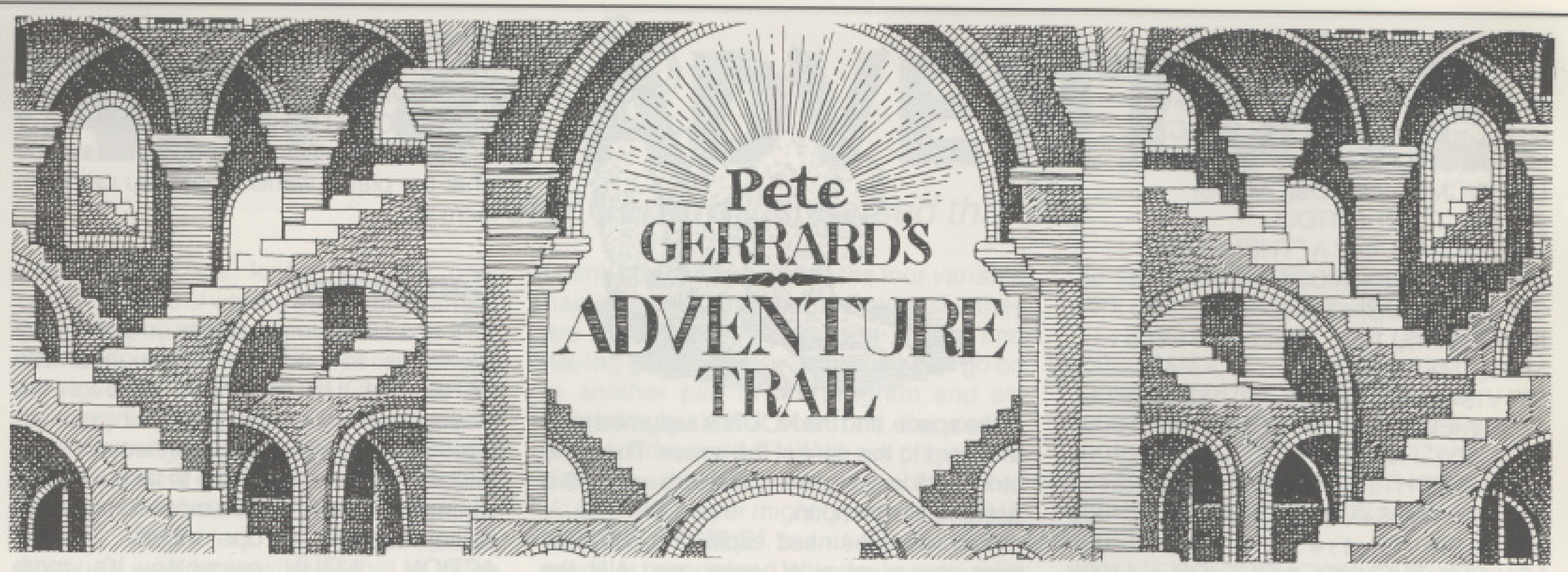
Fairly obvious checks are included in the program in case words are typed in but not recognised. Finally, if the verb is not understood the variable VB is assigned the value of one, which in the adventures we'll be writing relates to the word "GO". This allows the player to type in NORTH and the program will take that to mean GO NORTH. If a player types in DOOR, it will assume this to mean GO DOOR. On the other hand, if a player types in TOILET it will assume a meaning of GO TOILET, which might not necessarily be what the player wants to do. You can't win them all.

Conclusion

This is a fairly simple parser, in that it only allows us to understand straightforward VERB ... NOUN sentences, although the player can obviously type in something much more complex. By looking at the way it's been built up, perhaps you'd like to take a stab at writing a routine to handle more complicated sentences, as in our VERB... LINK... ACTION... NOUN examples, It's more tedious than it is complicated, so dust off the old grey matter and have a go. If you can't fathom it out, don't worry, because we'll be taking a look at the complete parser next month.

One final problem to ponder on. We said that we'd be looking at text compression as well, trying to fit as much text as possible into as small an amount of memory as possible. Knowing that it takes one byte of memory to store one character, how do you think we might go about doing this? As a clue we'll be looking at bits of bytes, so if you don't understand how they work then back to the reference books, but if you can wait till next month, then all will be revealed.

Happy adventuring!



I MENTIONED at the end of last month's column that I'd be looking at a number of adventures sent in by our intrepid readers. Wrong. Whether Dragon owners get busier with the advent of Spring or not I just don't know, but I must admit that the sight of my aged postman toiling up the road with a large collection of your letters almost broke my heart (and not through feeling sorry for him, either), so once more we revert to queries, hints and maps, and new games must wait for another month. Sorry chaps. I promise not to go to one of England's cricket games before reviewing those home-produced adventures, but will wish Mike Gatting and the lads all the best anyway.

Right, down to business, and a look at some maps first of all. Personally I think that maps are only really useful if they're on a one to one scale, but in the world of adventures I'm quite happy to think differently. *Syzygy* has probably prompted more queries than any other Dragon adventure, and it has also prompted more than one map to find its way to chez Gerrard. So, apologies to Paul Lasikiewicz for not using his map, but we'll be coming back to him later anyway.

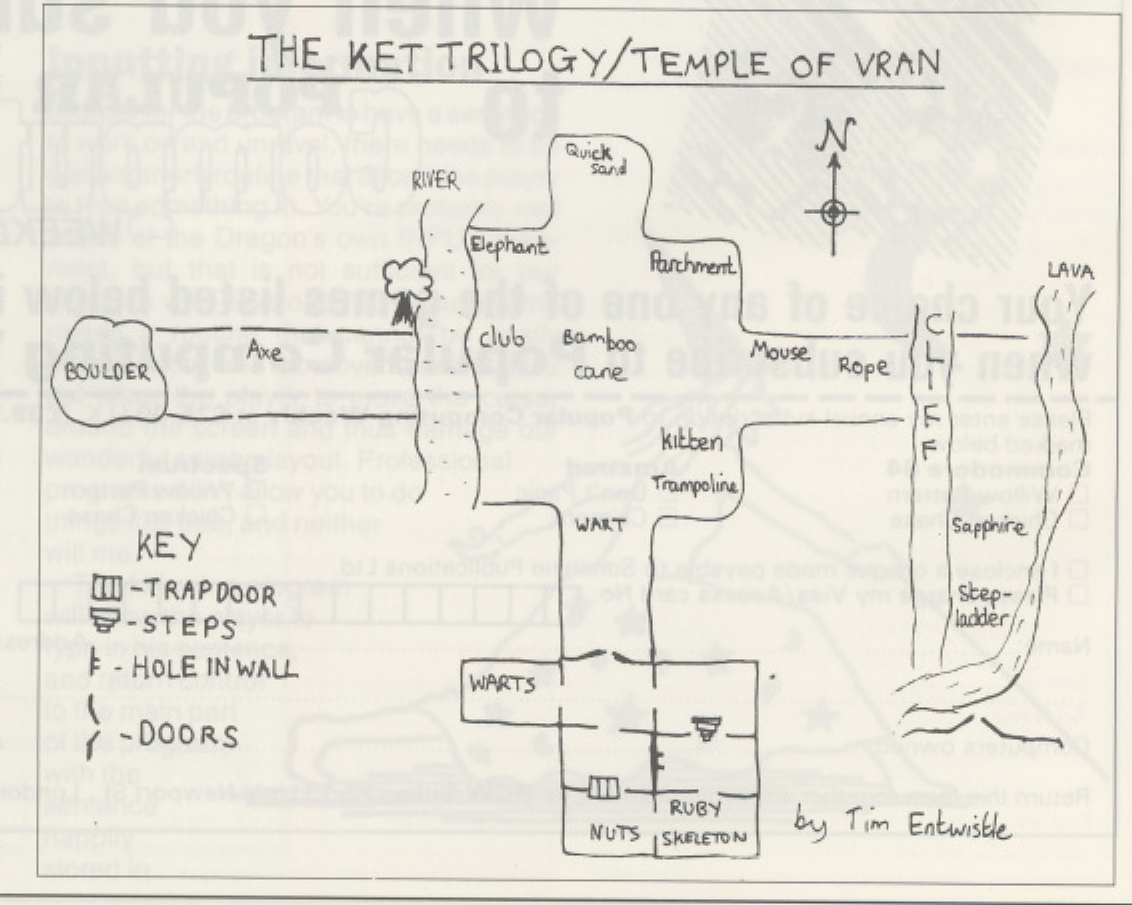
Tim Entwistle has obviously been a busy chap, and the maps of *Syzygy* and the *Temple of Vran* were produced by him. They should help anyone who's busy stumbling around in those two games. He has also produced a fistful of hints for anyone just beginning to find their way in *Tanglewood*, and so... to get rid of the giants you should YSNAT WORHT, to ride the magic carpet Goliath needs the ticket from the birds' nest in the woods, Beanbag can get into the walled garden via the Burrows, catmint can be found in a river, to enter Castle Schark Peabody should YRUCREM GOD TAE after dark before entering, and to stop the door on the walled garden from closing HCNARB A THIW TI EGDEW. By the way, Tim, the Expert isn't really Arthur Scargill ... I think.

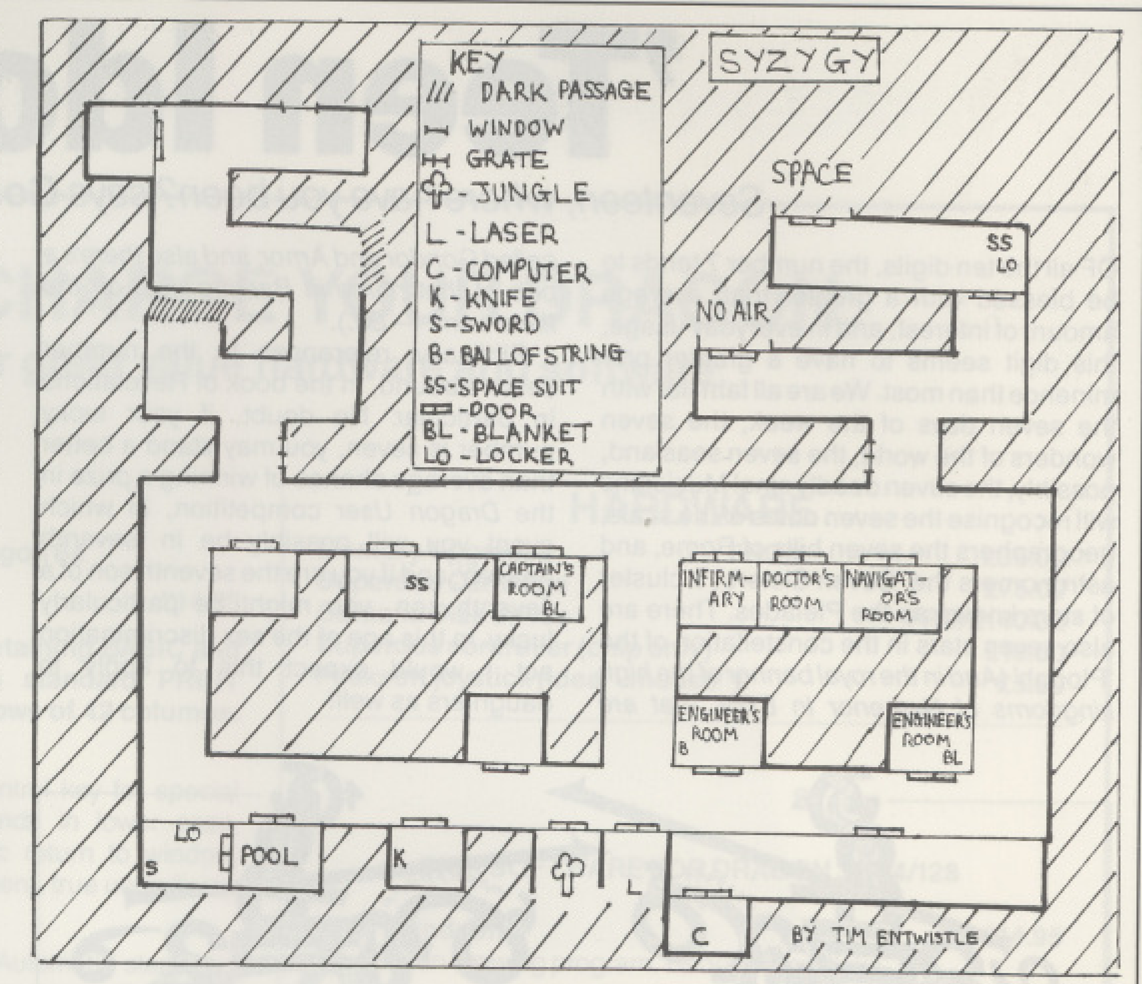
. . . MAPS

Back to the aformentioned Paul Lasikiewicz. Hopefully that's the last time I'll be writing his complete name! Now young Paul needs help on about five million Dragon adventures, but coming from St. Helens that's not very suprising really. After all, how did they fare against rugby-playing neighbours Wigan on Good Friday? Very badly, let me tell you. First the good news. He can help people on *Trekboer*, *Syzygy* and *Lost in Space*, and will send info to anyone who sends him an SAE and 20 pence for photocopying (how large are these solution sheets?). Now for the bad news. He is stuck on *Shenanigans*, *El Diablero*, *Jerusalem Adventure 2*, *William's Burg Adventure 3* and *Ultimate Adventure 4*. And that was just in his second letter! The first one also mentioned *Juxtaposition*, *Franklin's Tomb*, *Black Sanctum*, *Kingdom* etc. etc. etc. If anyone feels like helping him out, his address is 40 Sidlaw Avenue, Parr, St. Helens, Merseyside WA9 2BQ. He even begs me to print his telephone number, which is St. Helens 611827. Amongst his moans about not being able to complete various games, he does offer an interesting hint on *Syzygy*. How do you get across the pit? You can't cross the pit. This is the stuff, this is what they want. He does mention, however, that you can escape from the endless twisting passage if, and only if, you have the communicator and can TI ESU. If you haven't got it, then you can forget all hope of ever escaping. So, if you want help or want to offer help, then write to the lad. I won't be, since he broke the golden rule and did not include an SAE himself. Silly boy.

Dipping into the post bag, a letter by one Steve Joy leaps to hand. Sadly Steve's letter does not live up to his surname, since he has a whinge and whine about *The Cricklewood Incident*. Apparently, about every five minutes a command such as INV, BUY etc. results in the program restarting with the title page. 'Tulips from Amsterdam' now strikes fear into his heart, so he says, and who can blame him? To be honest this is the first time I've come across a problem like this with *The Cricklewood Incident*, and would suggest that Steve sends his tape back to Salamander with a demand for a new copy that, hopefully, doesn't restart every few minutes. Which is what you should all do with a faulty tape, and as long as your accompanying letter (with postage) is a reasonably friendly one then a new tape should soon be yours.

More offers of help from the prolific R. Cleminson, 6 Whamond Tower, Motherwell ML1 1UQ. Maps and solutions to *Ring of Darkness*, *Mansion*, *Jerusalem*, *Williamsburg*, *Stalag/Eno*, *Black Sanctum*, *Calixto Island*, *Pettigrew's Diary*, *Mystery of*





Java Star and *Franklin's Tomb* can all be yours for the price of an SAE. He is, however, stuck on *Lost In Space*, having problems with coloured discs and coloured boxes. This seems like a reasonable time to give you the solution (well, most of it) to *Lost In Space*, courtesy of young Michael Edwards. No backward writing this time, it's too long, so here goes...

1) The most important thing to do first is to gain protection from the robots. Go to level four and say LIGHT to get some light. Find the credit card (north of lift) then play the video game until something drops out. This is a ring, and will offer protection against robots.

2) Take the white disc (south of lift) then go to level 2. Go to the food machine and insert the white disc. Take and eat the pie to get a blue disc.

3) Go to level 5. Go E, N from lift then wave blue disc. Go N, DOWN then press the button. Go to level 3. Go E,N,E from the lift. Pull the lever. Go to level 5. Go E,N,N,DOWN,S,UP to find the red disc. Go to level 2. Go E,E from lift. Wave the red disc then open the box with the ring to get the black disc.

4) Go to level 3. Go E,S and wave the black disc. Go S, DOWN then press the button.

5) The codeword is ... FRANKLIN ...

Hint: the round rooms with grilles in the walls are lifts. To operate them type SAY plus a number. For example, SAY ONE.

So let's have no more queries about *Lost In Space*, okay? Continuing with Mr. Cleminson, he shares a problem with a lot of people out there regarding *Total Eclipse*. It would appear that the company involved in producing this, Eclipse Fenmar, have suffered a total eclipse themselves and are no longer in business. Has anyone completely finished this game? I'd love to hear from you if you have. Fenmar I give up on.

Thanks to another Scot, Stuart Cook, for sending me the largest SAE in the world. Help sheet for *Vortex Factor*? No problem. Leaping around the country we touch down next on Cornwall, 16 Woodland View, Lanivet, Bodmin, Cornwall PL30 5HQ to be exact, home of Bob Bernasconi. He can offer help on *Franklin's Tomb*, *Lost in Space*, *Trekboer* and *Vortex Factor*. Alas, he is stuck on *13th Task* and *Caverns of Doom*, which is rapidly becoming a thorn in the Gerrard paw. Having found some dynamite he can get no further, so I suggest that you REDLUOB EHT REDNU ETIMANYD EMOS TUP. This will block the river and lift you up the shaft, leading to yet more problems. Your problems, however, not mine!

Groveller of the month is Gary "help me" Templeton, who, even though he was writing to that other Gerrard chap, starts his letter Dear Sir Mike, begs for help, thinks that Dragon User is superb, and thanks everyone in the world in space for their continuing support. How can anyone ignore such a plea? Quite easily, really, but no. Poor chap is stuck on *The Vortex Factor* (help sheet should be received by now), and *Aquanaut 471*, so with any luck he'll have read last month's column and got himself sorted out. He also wants to know who killed Huey-14. It bothers me not a jot, as long as you've received his message, which reads:

"To save the director, you must:
1) Make a radiation vaccine (mushroom and seaweed)
2) Fix the reactor (eat the vaccine, use the module)
3) Press the button."

or something like that, anyway. Once the message is passed on, Huey-14 can quite happily be melted down and sent to join all the other dead robots that must be piling up somewhere. Little Huey is probably talking to some of Isaac Asimov's creations at this very moment.

Stuart Estell has a few hints for *The Keys of the Wizard*, namely that to get the scroll you need the rope, and to get the dragonsword you need the lantern. Unfortunately I read page two of his letter first, and thought that the sentence "if you lose you die as normal" was a bit harsh, really. However, soon realised that this was the latter half of a sentence which started "if you want to, you can release Vader for a practice battle, but" and on to what I'd already read. A little hint-ette for Syzygy freaks out there. Alas Mr. Estell can't get started on *Fishy Business*, so might I suggest Salamander's hint to you, which reads "everything around here starts underwater, which is all right if you don't mind looking like a prune. Don't go too far from the island." There, that should get you going, as they say.

These Dragon Magazine people are desperate. Sending free copies, offers of help on ANY adventures, something must be afoot. Andrew Hill, at 13 Parry Jones Close, Blaina, Gwent NP3 3NH is the contact man, and the latest issue is not bad at all. Lots of hints and tips for Dragon adventure players, so it's worth writing off for more information. However, who do they come to when they want the complete solution to *El Diablero*? Yours truly, of course, and if anyone else wants a copy of that then send in an SAE to the adventure trail, via *Dragon User* of course, and you'll receive one.

That's it for this month. Now then, where are those adventures for review . . .

Adventure Contact

To help puzzled adventurers further, we are instituting an Adventure Helpline — simply fill in the coupon below, stating the name of the adventure, your problem and your name and address, and send it to Dragon User Adventure Helpine, 12/13 Little Newport Street, London WC2H 7PP. As soon as enough entries have arrived, we will start printing them in the magazine.

Don't worry — you'll still have Adventure Trial to write to as well!

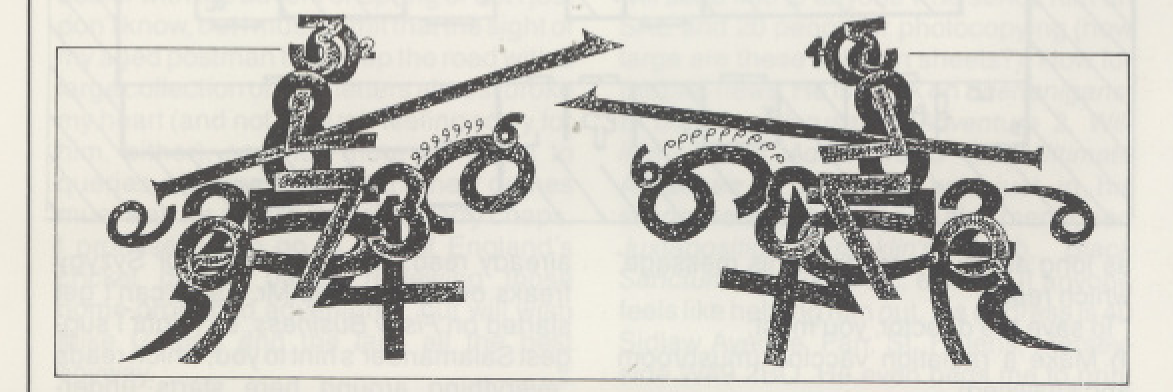
Adventure . . . .
Problem . . . .
. . . .
Name . . . .
Address . . . .
. . . .

'Teen Idol

Seventeen, where have you been? says **Gordon Lee**

OF all the ten digits, the number 7 tends to be blessed with a greater than average amount of interest, and in everyday usage, this digit seems to have a greater prominence than most. We are all familiar with the seven days of the week, the seven wonders of the world, the seven seas and, possibly, the seven deadly sins! Musicians will recognise the seven notes of the scale, geographers the seven hills of Rome, and astronomers the 'Seven Sisters', a cluster of stars known as the Pleiades. There are also seven stars in the constellation of the 'Plough' (*And in the royal banner of the high kingdoms of Numenor In Exile, that are called Gondor and Arnor, and also there's a pub of that name in Barking, just off the Ilford Lane — Ed.*).

Biblically, references to the number seven abound, in the book of Revelations in particular. No doubt, if your lucky number is seven, you may stand a better than average chance of winning a prize in the *Dragon User* competition, in which event you will possibly be in 'seventh heaven', and if you are the seventh son of a seventh son, you might be particularly lucky. In this age of the sex discrimination act I would expect this to apply to daughters as well!



Mathematically, the number seven has a number of interesting points. For example, the reciprocal of 7 (1/7) consists of an endless repeating cycle of 6 digits 142857. Moreover, the decimal expressions of 2/7, 3/7, and so on also comprise the same order of digits, though beginning at a different point in the cycle:

1/7 = 0.142857142857...
2/7 = 0.285714285714...
3/7 = 0.428571428571...

and so on.

Other numbers which possess this property include 17, 19, 23, 29, 47, 59, 61 and 97. In fact, theses are the only numbers less than 100 in which the number of digits in the repeating cycle is one less than the number itself. Thus, there is a cycle of 96 digits in the decimal of 1/97. Other larger numbers of this type include 1861, 7699 and 17389.

Seven is also the only digit for which there is not an easy test for divisibility. For example, we can say that any number, however large, is exactly divisible by 2 if the last digit is even. We don't need to work it out, we just know that the division is exact. All multiples of 5 must end in either a 5 or a zero. Similarly, if the digital root of a number is divisible by 3, then the number itself will be divisible by 3. These simple rules are sometimes useful to establish divisibility without having to bother to actually work out the actual sum.

Unfortunately, there is no simple test for establishing multiples of seven. This is not to say that tests do not exist, but these are quite complex, and often a trial division would be just as simple.

The Competition

The competition this month is related to numbers that are exact multiples of seventeen (not seven!). Write down any three digit number, for example, 620. Now add a fourth digit to the right-hand side such that the resulting four-digit number is a multiple of seventeen. In this case, we must write in a '5', to produce 6205. Now, take the last three digits of this new number and repeat the operation. So the sequence would be:

6205
2057
0578
5780
7803
803-

On reaching 803, it will be found impossible to add a single digit (0 to 9) to make a multiple of seventeen, so the series would end after five numbers.

What three-digit number (or numbers) should you start with in order to produce the longest sentence?

Prize

SEVENTEEN, it has sometimes been said, is the nearest things in decimal integers to a truly random number. Among stable entities it is the least stable; among definable quantities it is the least defined. To common minds it may merely be the roundest position greater than sixteen and smaller than eighteen, but those with more highly refined sensibilities can detect a subtle, almost mystic quality in the frequency with which SEVENTEEN appears where any other number would do as well. In competitions like this, for example.

In keeping with the mysterious mood of our puzzle, this month's prize IS NOT GOING TO BE REVEALED! But you can bet your life that it will be something worth having, there will be twenty of it as usual, and I think I can guarantee that it *won't* be a copy of either *Boulder Crash* or *Moon Cresta*!

Rules

As soon as your digits are divined, dump a printout of your program to envelope (no cassettes please) with any footnotes you want to include, not to mention your name and address, label the envelope JUNE COMPETITION and direct it to us at the usual address.

Finally (well, before posting) complete the tie breaker "Them wuz the days. Why, when *I* wuz seventeen, ...". Those under seventeen will just have to invent something like everybody else. Anything *really* unprintable will be disqualified so fast it won't even touch the ground. Happy inventing.

March winners

Aaarfh. Ummphh. Gaah. Flufphph. Someone help me out from under this pfile of pfaper, for pfete's sake.

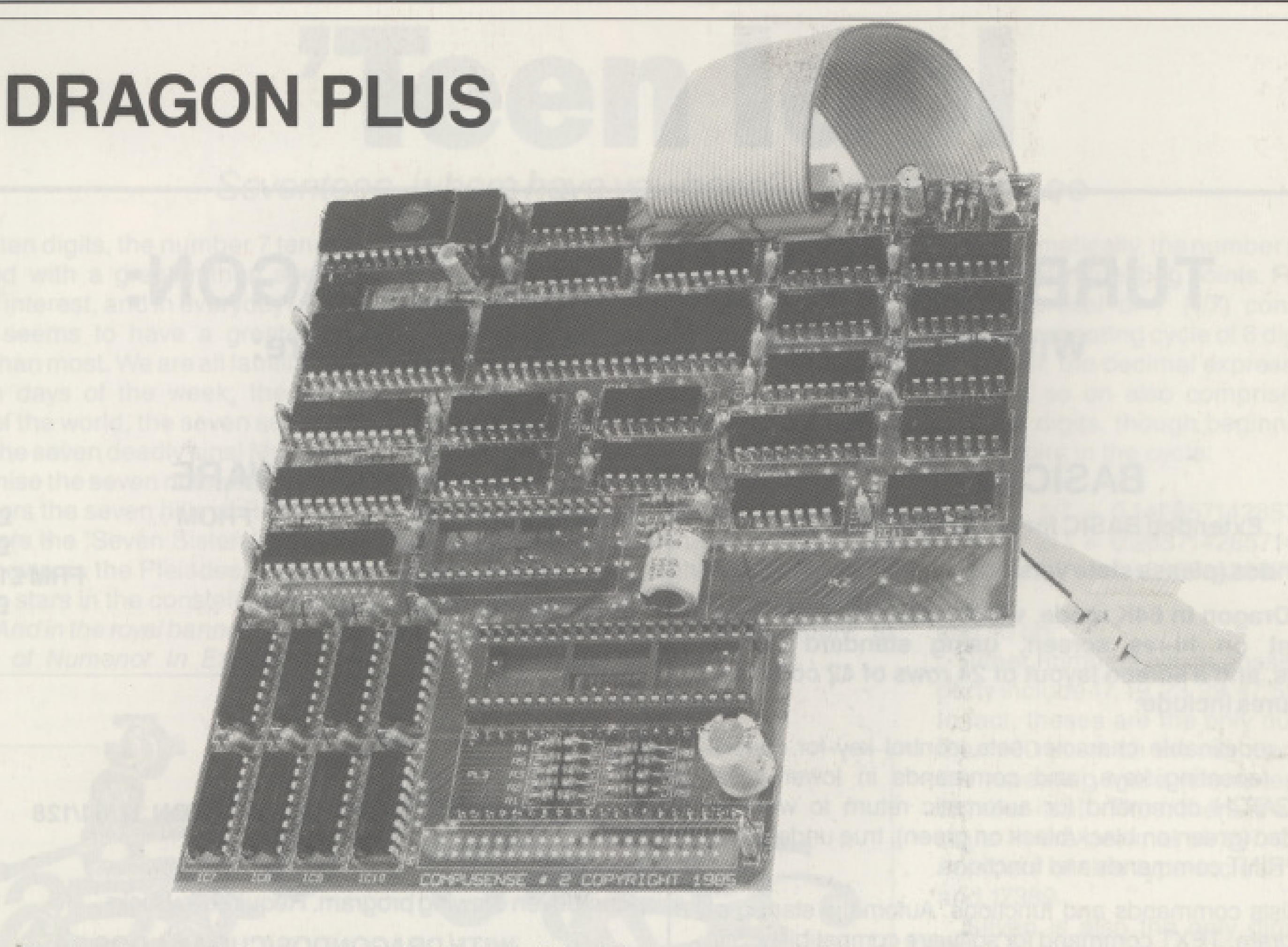
Thanks, Pete. I think we can reasonably say that we had one or two entries for the MARCH competition. Appropriately enough for an avalanche, the prize is Microdeal's *Stone Raider II*, and the twenty successful crosswforders are Matthew Diamond of Leeds, J.F. Singleton of Congleton (are you serious, JF??), Barry Caruth of Bangor, G.A. Hunt of Carnforth, P. Weedon of Wotton-under-Edge, Anthony Clarke of Wirral, Graham Barber of Sutton Coldfield, Simon Greenard of Ingatestone, Anthony Hopkins of Stifnal, James Bonfield of Sandy Beds (it says here), Robert Tuck of Chippenham, Pal Dahle of Norway, Paul Priestland of Lechlade, John Smallwood of Preston, Daniel Pons Mallol of Madrid, E.C. Hastead of Erith, D. Robertson of Epsom, Matthew Lodge of Cheshire, Rupert Shiers of Frinton and C.A. Fry of West Wickham.

Difficult one, this. There were miles of programs and piles of good tiebreakers. Best honourable mentions to G.R. Barber for "Gems and stones will break my bones, but jewel have to catch me first!" and to Anthony Clarke for "Gems and stones may break my bones, but bugs, pokes and bytes will never harm me."

Solution

See page 20.

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